Program Evaluation Plan:

Professional Standards Review Organizations

September 22, 1975

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF THE ASSISTANT SECRETARY FOR HEALTH
OFFICE OF PROFESSIONAL STANDARDS REVIEW

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FOREWORD

During the next few years, critical decisions will be made regarding the future of the American health care system. It is imperative that these decisions be based on a substantive analysis of the facts. Accordingly, the Office of Research, Evaluation and Planning is developing an evaluation strategy for all quality assurance programs managed by DHEW. The PSRO Evaluation Plan is a major component of this effort. It has been designed to provide an objective assessment of the effectiveness of the PSRO program. The analyses that are proposed as part of this plan are expecially timely in light of the major decisions that will be required for the enactment of National Health Insurance.

I wish to express my appreciation to the many persons who were consulted and gave us helpful suggestions.

I also wish to commend Dr. Martin Baum for directing the development of the plan; Dr. Zachary Dyckman for preparing the report on baseline data, Dr. Dale Schumacher who prepared the report on diagnoses to be used in evaluation, and Drs. Allen Berkowitz and Ron Lessing for their contributions to the statistical design of the evaluation plan.

John O'Rourke
Director
Office of Research Evaluation
and Planning

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Chapter I

Background and Purpose

CHAPTER I

BACKGROUND AND PURPOSE

In 1972, Congress enacted the PSRO legislation (PL 92-603) to assure that the services provided under Medicare, Medicaid and Maternal and Child Health [1/] are medically necessary, meet professionally recognized standards, and are provided in the most appropriate setting.

In Section 1163(e) and (f) of that legislation the duties and reporting requirements of the National Professional Standards Review Council (NPSRC) are delineated. These duties include:

(a) "review the operations of ... Professional Standards Review Organizations with a view to determining the effectiveness and comparative performance of such organizations;"

(b) "make or arrange for the making of studies and investigations with a view to developing and recommending to the Secretary and to the Congress measures designed more effectively to accomplish the purposes and objectives of (the PSRO program);"

(c) "not less often than annually, submit to the Secretary and to the Congress a report on ... the findings of its studies and investigations together with any recommendations it may have with respect to the more effective accomplishment of the purposes and objectives of (the PSRO program). Such report shall also contain comparative data indicating results of review activities conducted pursuant to this part, in each State and in each of the various areas thereof."

This section of PL 92-603, then, provides the legislative mandate for the evaluation of the PSRO program. In addition, evaluation of the PSRO program is critically important because of:

(a) the substantial impact PSROs can have on Federal health expenditures;

(b) its potential impact upon the entire health care system, in particular, as it relates to the practice of medicine;

1/ Hereafter, the term Medicube or the symbol M^3 will be used to denote the three titles under the Social Security Act that are of concern to the PSRO program, viz, Title V, Maternal and Child Health; Title XVIII, Medicare; and Title XIX, Medicaid.

(c) the need to gain a better understanding of the implications of the different mechanisms and their variations for quality assurance; and

(d) the need to establish an operational quality assurance system prior to the implementation of a National Health Insurance program.

The purpose of this document, therefore, is to provide a detailed plan for how the PSRO program will be evaluated. Primarily, the document if intended to be used by DHEW for the evaluation and long range management of the PSRO program, and by the National Professional Standards Review Council to report to the Secretary and to Congress on the overall effectiveness of the PSRO program.

The primary focus of the plan is the impact and overall effectiveness of the program at a regional and national level of aggregation. The evaluation is not intended to address explicitly the monitoring of individual PSROs for management purposes.

The evaluation of a program of this type is extremely complex. The uneven implementation and enormity of the program, limitations in measurement of human behavioral change and in health outcomes measurement technology, and the difficulties and expense in reconstructing utilization, cost, and quality data for the period prior to the inception of a PSRO are but a few of the complexities. The plan which follows is therefore limited by the current state-of-the-art in evaluation methodology and the environment in which the program is to be implemented. This evaluation plan is also limited to PSRO activities in short term or acute care institutions. Plans for the evaluation of ambulatory and long term care institutions will be developed after definitive policies are promulgated for those activities.

The specifics of the evaluation plan are contained in the following four chapters. Chapter II provides a description of the approach followed in developing the evaluation plan. The issues considered and selected for the evaluation of the program and their specifications are contained in Chapters III and IV respectively. Chapter V contains an implementation plan for the evaluation. In addition, there are two appendices: (1) the diagnoses and procedures to be used (Appendix A); and (2) baseline data collection options (Appendix B).

Chapter II

Approach

CHAPTER II

APPROACH

The approach utilized for the development of the evaluation plan consisted of seven steps. The steps were as follows:

(a) enumeration of program goals,
(b) identification of evaluation issues that address the goals,
(c) development of a conceptual framework for the issues,
(d) assignment of priorities to the issues,
(e) development of a detailed description of each issue,
(f) assessment of the feasibility of the analysis, and
(g) development of an implementation plan for the analyses.

PSRO PROGRAM GOALS

The primary goals established by the National Professional Standards Review Council form the core of the evaluation. These goals were derived from both the stated and implied provisions of the PSRO legislation (PL 92-603.)

The following goals, partitioned according to four basic areas of program impact, were accepted by the Council in early 1974:

a. Goals related to quality of service

1. To assure that services for which reimbursement is claimed meet or exceed a minimum standard of quality for health services to all beneficiaries of the covered programs.

2. To assure that high quality care is achieved through proper use of health care practitioners in terms of their competence.

b. Goals related to resource allocation

3. To assure that beneficiaries are admitted to suitable types of health care institutions when such admissions are required by their health problems, and for periods of time as are necessary for the proper medical management of their health problems.

4. To assure that the health care services received by beneficiaries are appropriate to their health problems.

5. To promote the efficient use of services, facilities and personnel in the provision of medically necessary health care.

c. Goals related to program implementation and acceptance

6. To determine if the cost of establishing and operating the PSRO program is commensurate with its impact on the utilization and quality of health care services.

7. To assure reasonably prompt PSRO coverage of health care services reimbursed under Titles V, XVIII, and XIX.

8. To maximize acceptance of, support for, and participation in the PSRO program among health care practitioners, fiscal intermediaries and carriers, and institutional providers.

9. To educate the public with respect to the contribution of the PSROs to assuring and improving the quality of health care services it is receiving.

10. To develop the necessary supporting mechanisms for the proper conduct of the PSRO program in maintaining the confidentiality of clinical data and the physician/patient relationship.

d. Goal related to professional education

11. To assure that the information gained from PSRO operations is used to bring about continuing improvement in the performance of health care personnel on both an individual and group basis.

IDENTIFICATION OF EVALUATION ISSUES

The determination of the extent to which overall program goals are achieved is a complex matter involving multiple considerations. For example, to achieve goal three,

> "To assure that beneficiaries are admitted to suitable types of health care institutions when such admissions are required by their health problems, and for periods of time as are necessary for the proper medical management of their health problems."

at least two separate questions must be addressed, viz., are (a) unnecessary admissions and (b) excessive lengths of stay prevented? Each of these problems is addressed through a number of different mechanisms, (e.g., admission certification, continued stay review, medical care evaluation studies, etc.)

A separate evaluation issue could be devised for each mechanism and/or variation. Consequently, a step in the evaluation strategy was the generation of the major issues that can be implicitly and explicitly derived from the stated goals. These are described in Chapters III and IV.

CONCEPTUAL FRAMEWORK FOR EVALUATION

The following conceptual framework was developed to organize the many evaluation issues. The timing of the evaluation analyses and their results were the basis of the fourfold classification:

1. Interim Issues - benchmarks which can be used to assess progress toward final goals. Such achievement can be measured in terms of overall program status and status of the individual program components. This category is needed because the nature of the PSRO program does not allow final program goals to be achieved during its earliest phases.

2. Formative Issues - those that are concerned with "forming" or "reforming" the structure or functioning of the program's elements.

3. Summative Issues - issues which address the final or ultimate objectives of the program. For the most part, they are derived from explicit statements in the enabling legislation or can be inferred from the legislative documentation. These issues are those that guide the measurement of whether the program has achieved the purposes for which it was established.

4. Secondary Effects Issues - Most large-scale programs usually have impacts - both positive and negative - for which the program was not specifically designed. These secondary effects issues are taken into consideration to obtain a comprehensive assessment of the full impact of the program.

PRIORITY SETTING

The number and complexity of the issues and the likelihood of scarce resources for evaluation required that priorities be established for the issues. Priorities were assigned on a three point scale, A through C (with A being used to designate the highest priority). The ratings were based on Council and staff judgments of each issue's relative overall importance to the evaluation of the PSRO program regardless of the resources required. (e.g., usefulness in assessing long-term program

impact and/or providing information which could lead to program improvement through changes in regulations or legislation) Subsequently the list of issues was further revised to reflect resource constraints. The results of the assignment are contained in Chapters III and IV.

SPECIFICATION FOR THE MAJOR ISSUES

It became evident that there were a number of pervasive questions related to each of the issues. These questions were as follows:

(a) Into what sub-issues does the issue divide itself?
(b) What analyses are required to address the issue?
(c) For each analysis, what are the rationale, interpretation, limitations, and pitfalls?
(d) What management and/or policy decisions can be made based on the issue analysis?
(e) What evaluation measures need to be formulated to perform the required analyses?
(f) What data are needed to obtain the measures and at what level of specificity should they be collected?
(g) What is the appropriate recording frequency for each data element and what is its appropriate source?
(h) What research is required before the analyses can be performed?

Answering these questions yields a description of each major evaluation issue in sufficient detail to provide:

(a) the basic information for the preparation of requests for contract (RFC) to carry out the recommended studies or analyses;
(b) the basic guidance for performing, in house, any of the recommended evaluation studies or analyses;
(c) the data requirements for the program evaluation; and
(d) as a by product, useful analyses for the management of the program.

Chapter IV contains these issue descriptions.

FEASIBILITY OF THE ANALYSES

Up to this point, the approach was mostly concerned with what <u>should</u> be done with respect to evaluation. It was also appropriate to investigate what could be done. In this regard there were a number of discrepancies between the <u>should</u> and <u>could</u> of the PSRO program evaluation. Some of the reasons for these discrepancies are:

(a) The methodological state-of-the-art is not far enough advanced to provide the tools necessary to answer some of the questions posed.
(b) Some analyses would not be worth the cost.
(c) Certain baseline data are unavailable, unreliable, invalid.
(d) Certain data are too expensive to collect.

To assess the technical feasibility problem, two factors were considered: data and methodology. With respect to data, it is the baseline data (that data pertaining to the period of time prior to the implementation of a PSRO), that is the potentially constraining element on the feasibility of analysis. The collection of these data is required to evaluate the impact over time of the PSRO program on physician and institution behavior as it relates to quality, utilization, and cost. Data for the period of time during the operation of a PSRO will be available via the PSRO management information systems and through special studies.

Currently, there is no national system or systems which have collected baseline data. Consequently, it was necessary to determine the feasibility and methods for collecting these data. The technical feasibility of collecting baseline data was assessed by a study in which actual data was identified and collected from hospital records. Appendix B contains a description of these data and an analysis of the options available for their collection. No options are recommended because additional information regarding some of the options are still forthcoming. In this regard, the Institute of Medicine of the National Academy of Science, under contract to DHEW, is currently conducting a study to determine whether utilization data obtained from commercial abstracting services can be used as a baseline for assessing the impact of the program. As a by product of the study, a national sample of hospitals (which could be used for the collection of baseline data) and a more accurate estimate of the cost to implement the options discussed in Appendix B will be developed. The results of this study are expected by January 1976. At that time the exact method for acquiring the baseline data needed by the evaluation will be determined.

Technical feasibility in terms of methodology was determined during the development of the issue descriptions. These questions dealing with the analysis were addressed in detail, so that deficiencies in methodology became apparent.

Reductions in the cost of performing the analyses can be achieved through the use of sampling techniques. It is presumed in sampling that if the correct amount of data is collected in the right fashion that they will yield measurements which are an adequate approximation of the entire data set.

There are a number of ways that sampling can be performed in the evaluation. One method would be to collect 100% of the data from a selected set of PSROs representative of various PSRO organizational and functional models. A second method would be to collect only a portion of the data for each data element from all of the PSROs. A third method would be some combination of the first two. For example, a certain set of data elements could be collected from all of the PSROs and another set of data elements collected from only a sample of the PSROs.

IMPLEMENTATION

The concluding step in the development of the evaluation plan was the consideration of implementing the plan. Chapter V contains an implementation strategy which was developed to assure that the evaluation will be performed successfully, in a timely fashion, and within overall budgetary constraints. Accordingly, the following items were addressed:

1. agencies responsible for implementation,
2. time scheduling, and
3. cost and manpower requirements.

Chapter III

Evaluation Issues

CHAPTER III

EVALUATION ISSUES

The major evaluation issues that were derived from the program goals are listed according to issue classification (interim, formative, summative, secondary effects) in Tables 1-4 . These tables also include the sub-issues and priority (as designated by the NPSRC and OPSR staff) for each issue. Because of the large number of important evaluation issues, the even larger number of sub-issues required to address each issue, and the complexity of the analyses, it was decided that only those with the highest priority would be considered at this time in the evaluation plan. Lower priority issues are identified, but their issue descriptions have not been developed. If at a later time, a lower priority issue receives a higher priority, it can be easily added to the evaluation plan. The descriptions for high priority issues are contained in Chapter IV.

Many of these issues, in particular, those dealing with medical care review, require diagnostic and procedural specific analyses. This means that clinical data will be required. Because of the costs associated with collecting and analyzing these, it was not practical or feasible to consider all possible diagnoses or procedures. Therefore, it was necessary for the evaluation plan to specify the diagnoses and procedures to be used in the analyses. Table 5 contains the list of the selected diagnoses and procedures, and Appendix A describes the selection methodology and discusses the technical considerations related to the availability and use of the requisite clinical data.

TABLE 1

INTERIM ISSUES

ISSUES	PRIORITIES
1. Have the PSRO program elements (PSROs, support centers, State Councils) been developed and placed into operation as planned?	A
a. What is the status of the program in terms of coverage (geographic and beneficiary population), basic implementation schedule and cost?	
b. How far advanced is the PSRO program in terms of the progress that has been made toward implementing the PSRO functions (e.g., AC, CSR, MCE, Profiles, etc.)?	

TABLE 2

FORMATIVE ISSUES

ISSUES	PRIORITIES
Medical Care Review	
1. Have admission certification and continued stay review (concurrent review) been effective methods of reducing medically unnecessary hospital utilization?	A
a. To what extent has admission certification (AC) resulted in reducing unnecessary admissions?	
b. To what extent has continued stay review (CSR) resulted in reducing excessive lengths of stay?	
c. How does the effectiveness of concurrent review vary with respect to: . PSROs . institutions . AC models (e.g. preadmission certification) . CSR models (e.g. alternative percentile cutoffs)?	
d. To what extent has CSR resulted in medically inappropriate denials of extension?	
e. What has been the impact of PSRO induced changes in hospital utilization in terms of Medicube expenditures for health care?	
f. Has utilization control, through concurrent review, resulted in net savings?	
2. Is concurrent quality assessment (CQA), as carried out in the PSRO program, an effective method of assuring the appropriate utilization of services (diagnostic and therapeutic procedures)?	A
a. To what extent has CQA (focused on assuring compliance with "essential" criteria elements) resulted in improvements in patient outcomes?	

TABLE 2, FORMATIVE ISSUES (Continued)

ISSUES	PRIORITIES
b. To what extent has CQA resulted in a reduction of deviations from criteria and standards?	
c. What is the cost of CQA?	
3. Is retrospective health care review, as carried out in the PSRO program, an effective method of assessing the quality and appropriateness of the utilization of services?	A
a. How effective are the methods employed by the PSROs (including institutional, practitioner and patient profiling) for identifying problem areas that require further assessment by MCE studies?	
b. Are adequate methodologies being utilized in the performance of MCE Studies?	
c. To what extent have MCE studies effected corrective action?	
d. Are some MCE models more effective than others?	
4. How effective are the various corrective mechanisms applied to institutions or practitioners for correcting inappropriate utilization of services and/or improving the quality of care?	
a. What has been the incidence of use of various corrective mechanisms relating to concurrent review?	
b. What has been the impact of concurrent review denials and special concurrent review requirements (e.g., preadmission certification) on the incidence of inappropriate utilization of services?	
c. Have recommendations by PSROs for continuing education had beneficial impacts on individual physician performance?	

TABLE 2, FORMATIVE ISSUES (Continued)

ISSUES	PRIORITIES
d. Have recommendations for organizational changes in hospitals (as a result of PSRO activities) led to a decrease in inappropriate utilization of services and/or improvements in quality?	
e. What has been the incidence of Section 1160 (b) sanctions, and what has been the impact of such sanctions?	
External Relations	
5. How effective is the program of communications for disseminating information concerning PSRO activities and achievements to institutional providers, professional societies, individual practitioners and medical educators?	C
6. How effective is the program of communications for disseminating information concerning PSRO activities and achievements to the public?	C
7. What is the cost of the external relations program?	C
Norms, Standards, and Criteria	
8. How appropriate is the variation among PSROs in terms of standards and criteria for admission certification, continued stay review and review of patient management with respect to diagnostic and therapeutic procedures?	B
a. To what extent do the standards and criteria vary among PSROs?	
b. Do the criteria and standards adopted by PSROs and institutions screen out cases for further review?	
c. What are the key factors which contribute to variations in criteria and standards, and are such variations justified?	

TABLE 2. FORMATIVE ISSUES (Continued)

ISSUES	PRIORITIES
9. Are criteria and standards being developed and reviewed systematically and on a timely basis and are revisions implemented?	A
a. What selection, control, and review processes are utilized to ensure the timely development of new and revision of established criteria and standards?	
b. What factors are utilized to develop new and revise established criteria and standards?	
10. What is the cost for development, review, and modification of criteria and standards?	B
Notification, review, and appeals	
11. How have various notification, review and appeals processes affected the health care review mechanisms?	B
12. Does the structure of the notifications, review, and appeals mechanism allow for an efficient and judicious system?	B
Administration and organization	
13. How effectively and efficiently are the various PSROs organized in terms of their:	A
a. relationships with other organizations (health care institutions, state councils, support centers, etc.),	
b. Staffing (number, job classifications, qualifications of personnel, etc.),	
c. delegation of functions (e.g., review authority),	

TABLE 2. FORMATIVE ISSUES (Continued)

ISSUES	PRIORITIES
d. review activity reimbursement mechanisms?	
14. What has been the effectiveness of PSRO self-evaluations?	B
15. Have support centers effectively provided technical support to the PSROs during their planning, conditional and operational stages?	B
16. Have state councils been effective in carrying out their functions?	C
17. Are the numbers of personnel and their levels of skill and training appropriate for the effective operation of the various program elements?	B
18. How efficient and effective are the PSRO information systems with respect to unit costs, quality of the data base, timeliness, maintainability, and flexibility?	B
19. How does the effectiveness and efficiency vary across data flow models?	B
20. How effective is the data confidentiality system?	B

TABLE 3

SUMMATIVE ISSUES

ISSUES	PRIORITIES
1. Are all Medicube beneficiaries covered by activities of PSROs?	A
a. Have PSRO activities been implemented in all hospitals which participate in Medicube benefit programs and which are located in PSRO areas with conditional or operational PSROs?	
b. Are all Medicube hospital episodes receiving PSRO review?	
2. Are the health care review activities (Ac, CSR, CQA, MCE and profiling), as carried out in the PSRO program, assuring the quality and appropriateness of the utilization of health services?	A
3. What has been the impact of PSRO activities on physician behavior?	A
a. How have physicians' patterns of practice changed as measured by deviations from criteria and standards?	
b. Has physician participation in the Medicube programs changed significantly?	
c. What impact have organizational and environmental factors had on changes in physician behavior?	

TABLE 3 SUMMATIVE ISSUES (Continued)

ISSUES	PRIORITIES
4. What has been the impact of PSRO activities on institutional behavior?	A
a. Has the organizational structure (e.g., committees and staffing levels) and operating procedures (e.g., medical records abstracting) of the institutions changed as a result of PSRO activities?	
b. Have there been changes in the physical structure or layouts of institutions as a result of PSRO activities?	
c. Has there been a significant change in participation by institutions in the Medicube programs?	
d. Do hospital occupancy rates indicate that changes in Medicube utilization induced by PSRO review have been offset by changes in utilization by non-Medicube populations?	
5. What has been the effect of PSRO activities on health care expenditures in the United States?	A
a. What have been the changes in health care expenditures in the United States with respect to:	
(1) total health care expenditures, (2) total Medicube expenditures, (3) PSRO program expenditures?	
b. What has been the effect of PSRO activities on per capita Medicube expenditures?	
c. What have been the changes in hospital expenditures on utilization review (UR) and other quality assurance activities due to the introduction of PSROs?	

TABLE 4

SECONDARY EFFECT ISSUES

ISSUES	PRIORITIES
1. What has been the impact of the PSRO program on other Federal programs, e.g., CHP, HMOs, NHI, and manpower?	C
2. What has been the impact of the PSRO program on health regulation and health regulatory agencies?	C
3. What has been the effect of the PSRO program on the diffusion of medical technology?	B
4. What has been the impact of PSRO activities on health professional education and physician participation in continuing education?	B
5. What has been the effect of PSRO activities on health care institutions with regards to charges?	B
6. What has been the impact of PSRO activities on the health status of the Medicube and non-Medicube populations?	A

TABLE 5

CONDITIONS USED IN THE EVALUATION

OF THE PSRO PROGRAM

	ICDA-8
Malignant Neoplasm Breast	174
Diabetes Mellitus	250
Neuroses	300
Cataract	374
Hypertension	400 - 404
Acute Myocardial Infarction	410
Chronic Ischemic Heart Disease	412
Congestive Heart Failure	427.0, 427.1
Cerebrovascular Disease	430 - 438*
Pneumonia	480 - 486*
Hypertrophy Tonsils & Adenoids	500
Ulcer	531 - 534
Acute Appendicitis	540 - 542
Inguinal Hernia without obstruction	550
Cholelithiasis/cystitis	574, 575
End Stage Renal Disease	580, 582, 753.1, 759.8, 590.0, 590.1, 446.2, 752, 753
Urinary Tract Infection	590, 595
Hyperplasia Prostate	600
Delivery with and without complications	650 - 662
Intervertebral Disc Displacement	725

TABLE 5 - cont.

	ICDA-8
Fracture Femur	820
Complications and Adverse Reactions	960 - 979 995 - 999
Hysterectomy	69.1 - 69.7

*Includes unspecified cases

Chapter IV

Specification of Evaluation Issues

CHAPTER IV

SPECIFICATION OF EVALUATION ISSUES

The two preceding chapters have specified (1) the issues that were considered and selected for the evaluation of the PSRO program and (2) the questions whose answers define the detailed issue specifications. This chapter contains the detailed specifications for each of the 13 selected (A priority) evaluation issues. The issues are presented according to issue classification (interim, formative, summative, and secondary effects) and are as follows:

Interim Issue

1 Pages 23 - 26	Have the PSRO program elements (PSROs, support centers, State Councils) been developed and placed into operation as planned?

Formative Issue

1 Pages 27 - 46	Have admission certification and continued stay review (concurrent review) been effective methods of reducing medically unnecessary hospital utilization?
2 Pages 47 - 52	Is concurrent quality assessment (CQA), as carried out in the PSRO program, an effective method of assuring the appropriate utilization of services (diagnostic and therapeutic procedures)?
3 Pages 53 - 63	Is retrospective health care review, as carried out in the PSRO program, an effective method of assessing the quality and appropriateness of the utilization of services?
4 Pages 64 - 70	How effective are the various corrective mechanisms applied to institutions or practitioners for correcting inappropriate utilization of services and/or improving the quality of care?

9 Pages 71 - 75	Are criteria and standards being developed and reviewed systematically and on a timely basis and are revisions implemented?
13 Pages 76 - 79	How effectively and efficiently are the various PSROs organized?

Summative Issues

1 Pages 80 - 82	Are all Medicube beneficiaries covered by activities of PSROs?
2 Page 83	Are the health care review activities (AC, CSR, CQA, MCE and profiling), as carried out in the PSRO program, assuring the quality and appropriateness of the utilization of health services?
3 Pages 84 - 89	What has been the impact of PSRO activities on physician behavior?
4 Pages 90 - 95	What has been the impact of PSRO activities on institutional behavior?
5 Pages 96 - 101	What has been the effect of PSRO activities on health care expenditures in the United States?

Secondary Effects Issue

6 Page 102	What has been the impact of PSRO activities on the health status of the Medicube and non-Medicube populations?

INTERIM ISSUES

Issue #1: HAVE THE PSRO PROGRAM ELEMENTS (PSROS, SUPPORT CENTERS, AND STATE COUNCILS) BEEN DEVELOPED AND PLACED INTO OPERATION AS PLANNED?

A. Sub-Issues

1. What is the status of the program in terms of coverage (geographic and beneficiary population), basic implementation schedule, and cost?

2. How far advanced is the PSRO program in terms of the progress that has been made toward implementing the PSRO functions (e.g., AC, CSR, MCE, Profiles, etc.)?

Rationale:

It is impossible to measure fully the effectiveness of the PSRO program in the short run. Effectiveness of the program development effort is contingent upon (a) putting in place appropriate program elements and (b) impacting on program goals at agreed upon levels of effectiveness. This latter aspect will not be measurable until the program has had sufficient time to mature.

Certain process issues, however, may be evaluated. At the simplest level, it may be determined if program elements have been developed and placed into operation on schedule. Barriers to development may be isolated, and strategies to overcome the barriers developed.

B. Management/Policy Decisions

The analysis of this issue will provide essential information for the decisions to:

1. Recommend changes in the program development schedule, both with respect to time and numbers of program elements.

2. Monitor individual PSRO function development more closely for consideration of contract continuation.

3. Provide additional technical assistance to a particular program element or groups of such elements.

C. Analysis

Analysis will be based on a review of contract applications, contracts, PSRO

information system (PMIS) reports and progress reports from the PSROs, State Councils and support centers. Progress of each PSRO will be compared to its implementation plan. The following measures of the overall program's development will be obtained and compared to the expected program progress schedule: (Table 6, Items 1-5)

(a) Number, percent of total, geographic distribution and operating status (e.g., planning, conditional, operational) of PSROs, State Councils, and support centers.
(b) Size and percent of total population covered by program.
(c) Number and percent of total hospital admissions reviewed.
(d) Budget of each PSRO.
(e) Number and category of diagnoses for which standards and criteria have been developed.

In addition, the status of the following designated PSRO functions will be measured in terms of their number, amount of time they have been fully operational, and costs (Table 6, Item 6):

(a) admission certification
(b) continued stay review
(c) medical care evaluations studies
(d) practitioner, institutional, and patient profiles
(e) external relations
(f) internal relations
(g) standards and criteria development
(h) reviews and appeals
(i) management (e.g., staffing)
(j) delegation of review
(k) data systems
(l) continuing education
(m) LTC review
(n) ambulatory review

Those PSROs who are considerably behind in meeting their scheduled milestones will be surveyed to determine the reasons for the delay. In this way the type and level of technical assistance required to correct the problems can be assessed.

TABLE 6

EVALUATION MEASURES/DATA SPECIFICATIONS

Evaluation Measures	Data Element	Specificity	Source	Reporting Frequency
1. Number of program elements	Number of PSROs Number of State Councils and number of support centers	Status (planning, conditional and operational)	Contract Management System	Annual
2. Program Coverage				
a. Number of Program Elements ÷ Total possible number of program elements	Number of PSROs	Status (planning, conditional and operational)	PMIS	Annual
b. Persons currently covered by program ÷ Total eligible population	Persons covered by program Total eligible population	Medicube		Annual
3. Review coverage Number of M^3 admissions reviewed / Total number of M^3 admissions	Number of M^3 admissions reviewed Total Number of M^3 admissions	PSRO	PMIS	Annual
4. Number of diagnoses for which standards and criteria have been developed		PSRO	PMIS	Annual
5. Allocation of funds	PSRO Budget	PSRO	PMIS	Annual
6. Status of PSRO functions	Number of PSROs with operational function Length of time function has been operational Cost of performing function		Contract Management System	Annual
a. medical care review 1. admission certification 2. continued stay review 3. medical care evaluation studies 4. practitioner, institutional, and patient profiles 5. review and appeals				
b. external relations	Number of PSROs with some form of news letter or formal communications vehicle Frequency of newsletter		Survey	Annual
c. staffing	Number of staff Total cost of staff	Job position qualifications	Contract Management System	Annual

Evaluation Measures	Data Element	Specificity	Source	Recording Frequency
d. delegation of review	Number of PSROS with at least one hospital delegated review authority		Contract Management System	
	Number of hospitals	PSRO		Annual
e. data system	Number of PSROs with data systems	type (medical review, financial, etc.) computerized, manual, confidentiality	Contract Management System	Annual
f. continuing education	Number of PSROs with continuing education relationships		Contract Management System	
	Number of participants	PSRO		Annual
g. LTC review	Number of PSROs with function		Contract Management System	
	Number of facilities covered			
	Length of time review operational			
	Cost of performing review	PSRO		Annual
h. ambulatory review	Number of PSROs with function		Contract Management System	
	Number of facilities covered			
	Length of time review operational			
	Cost of performing review	PSRO		Annual

FORMATIVE ISSUES

Issue #1: HAVE ADMISSION CERTIFICATION AND CONTINUED STAY REVIEW (CONCURRENT REVIEW) BEEN EFFECTIVE METHODS OF REDUCING MEDICALLY UNNECESSARY HOSPITAL UTILIZATION?

A. Sub-Issues

1. To what extent has AC resulted in reducing medically unnecessary admissions?

2. To what extent has CSR resulted in reducing excessive lengths of stay?

3. How does the effectiveness of concurrent review vary with respect to:

   (a) PSROs,
   (b) Institutions,
   (c) AC models (e.g., preadmission certification)
   (d) CSR models (e.g., alternative percentile cutoffs for continued stay review)?

4. To what extent has CSR resulted in medically inappropriate denials of extension?

5. What has been the impact of PSRO-induced changes in hospital utilization in terms of Medicube expenditures for health care?

6. Has utilization control through concurrent review resulted in net savings?

Rationale:

It is currently believed that a significant portion of Medicube hospital utilization is not medically necessary. If concurrent review is effective it should result in a decrease in Medicube hospital utilization through reduction of this unnecessary component. It is therefore important to measure this effect and to test for its uniformity across PSROs and institutions. Because varying approaches will be used to implement concurrent review (e.g., preadmission certification), it will also be important to identify the approaches which particularly enhance (or reduce) the effectiveness of this component of the PSRO program.

Utilization control through concurrent review, however, may create problems. Premature discharge may reflect itself in longer recovery times, in inappropriate variations in treatment, or in excessive ambulatory care. It also might be reflected in hospital readmissions. If there is a tendency to discharge patients too early, this practice might be indicated by higher rates of readmission for the same or related conditions within a short time after discharge. Thus, if an inappropriately short length of stay criterion is enforced, the readmission rates might show an increase. It is therefore necessary to monitor readmission rates to determine if short stays are producing untoward results. (The monitoring of individuals' receipt of health services--inpatient, ambulatory and long term -- necessary to conduct an examination of possible similar effects of the AC component of the program would be extremely costly and would involve the risk of considerable infringement of personal privacy. As a result, such an examination will not be conducted as part of this evaluation.)

Finally, measurement of the effectiveness of concurrent review must be analyzed related to the costs incurred. It is therefore necessary to estimate in dollar terms the impact of utilization changes induced by PSRO review, and to compare these "benefits" to the expenditures for concurrent review.

B. Management/Policy Decisions

The analysis of this issue will provide essential information for the decisions to:

1. Change admission criteria.
2. Change LOS and/or extension certification criteria and standards for specific diagnoses.
3. Recommend to the PSROs the adoption of a specific AC model or models.
4. Recommend to the PSROs the adoption of a specific CSR model or models.
5. Monitor certain institutions or PSROs more closely.

C. Analysis

While methodological and data problems are not uncommon to the analyses presented in this Plan, they are particularily acute with respect to the analyses of this issue. Two of these problems were thought to be sufficiently important to warrant special consideration as a preface to the analyses.

A significant data problem is caused by the following situation: (a) there is a wide variety of health services which may be provided during an episode of care, however, the setting of the delivery of each service is not always and not often dependent on the service; (b) the recording of the provision

of services is fragmented according to setting, and the quality of the data varies by setting; (c) there exists no national system for the collection of comprehensive, integrated records of Medicube utilization regardless of data quality; and (d) because of the complexity of the PSRO program and its limited initial authority, reviews and data collection will focus only on care provided in hospitals.

Thus while the PSRO program is expected to have spillover impacts on ambulatory and long term care, adequate data to support measurement and evaluation of these impacts at a national level will not be available. Collection of such data - operational and particularly baseline - is beyond the scope of the PSRO program, much less the PSRO Evaluation. (Some comprehensive data is available on Medicaid patients in those states which have implemented the Medicaid Management Information System, MMIS. Few states, however, have had long experience with the MMIS, and those states which have had the experience are not typical of the states as a whole. The self-selection bias inherent in the use of such data in a national program evaluation might seriously compromise the results of that evaluation, and as a result, the use of this data has not been specified in this Evaluation Plan. However, so that the possible insights available through the examination of such data will not be forgone, further consideration will be given to special studies, where possible, on observed changes in patient profiles available through the MMIS).

Because of the lack of comprehensive, national data, the analyses are focused on measures of inpatient hospitalization. However, although at the present time the spillover impacts may be immeasurable, they have been given consideration, where possible, in the design of the analyses.

A second major problem particular to the analysis of this issue involves the definition and measurement of "unnecessary" care. It has been suggested that a direct approach be used to determine the extent to which concurrent review reduces medically unnecessary utilization. While such methods have been successfully designed for use in individual institutions,1/ the use of such a methodology in a national evaluation program poses a number of problems. Developing a widely acceptable algorithm is the prime example. Conceptions for identifying unnecessary care are both numerous and diverse.2/ No one of thse concepts seems so obviously better than all others. However, even if there were such a methodology, its use would be questionable in the PSRO program because it implies the development of national standards, a concept contrary to the PSRO legislation.

1/ Cf. Zimmer, "Length of stay and hospital bed misutilization," "Medical Care", May 1974. Also see the works of Brook, Gertman, and others.
2/ Cf. Boulding, "The concept of need for health services," Milbank Memorial Fund Quarterly, October 1966.

Another methodological problem is the use of concurrent review denials as a surrogate measure of unnecessary care as has been suggested by several sources. While such denials will be meaningful as instances of proposed care judged not medically necessary, these denials cannot be aggregated to form an adequate measure of unnecessary care that would have been provided in the absence of the PSRO program. The major reason for this is that the denials themselves have both educational and deterrent effects. These effects tend to inhibit the provision of unnecessary care, however, neither effect is directly measurable. Thus, the number of denials would underestimate unnecessary care averted as a result of PSRO activities. Finally, the absence of baseline denial statistics further lessens the usefulness of denials for the examination of unnecessary care. (Denials are meaningful, however, in the examination of changes in physician behavior. See Formative Issue #4.)

As a result of these factors the approaches to be used in the evaluation of concurrent review are indirect ones.

1. Description of the Analyses

Ideally, for the analysis of this issue, one would conduct a well controlled experiement where the observed changes in utilization would be due solely to the presence or absence of PSRO activities. Such a level of control would be difficult, if not impossible, to achieve. It may be possible, however, to control for enough critical factors to allow for at least the conduct of a meaningful quasi-experiment. The analyses which follow have been designed such that they can be put into the context of a quasi-controlled study, where possible. The results of the analyses, however, are not totally dependent upon the ability to conduct a quasi-controlled study. Should the data indicate that the study is insufficiently controlled, the analysis will still be capable of providing measures of the impact of PSRO on utilization.

The analyses of the first sub-issue and parts of three other sub-issues will be conducted in the course of a quasi-controlled experiment involving a sample of PSRO areas which have a conditional PSRO (designated in calender year 1975) and a matched sample 3/of PSRO areas which have not had a PSRO (in any stage) designated before the end of 1976. (The matching will be based on characteristics of the PSRO areas such as number of Medicube admissions, number of hospitals, population density, etc.) These analyses will be based on comparisons of utilization changes which are observed in calender years 1976 and 1977. The sources of data will be the PSRO Discharge Data Set (PHDDS) in the active PSRO areas, and collected Uniform Hospital Data Abstract (UHDA) records and supplementary data for Medicare and Medicaid in the non-active areas.

3/ Hereafter, in descriptions of analyses involving comparisons of matched PSRO areas, the term "active PSRO area " will be used to denote a PSRO area which has a conditional or operational PSRO. The term "non-active PSRO area" will be used to denote a PSRO area which has not had designated an operational, conditional, or planning PSRO.

(PSROs in states which initiate changes in Medicaid benefit packages or eligibility rules will be excluded from the analysis unless they can be matched with PSROs in the same state.)

Reduction of Medically Unnecessary Admissions

This analysis will be based on longitudinal studies of diagnostic specific and population based admission rates. If some percentage of acute hospitalizations are not medically necessary, the institution of an effective AC program should at least initially reduce admission rates through elimination of the "unnecessary" component. Therefore, relative changes in admission rates between time periods will be the primary impact measure.

Baseline data in each PSRO area should provide information on diagnostic-specific and population based admission rates per quarter for at least one year's time. (Admission rates per quarter are necessary to enable adjustments for seasonal variations.) This will require that the baseline data include estimates of the size of the corresponding Medicube populations. In the choice of diagnoses to be used in this analysis preference is given to those diagnoses which have demonstrated relatively stable admission rates in the recent past. This is done to eliminate as much random fluctuation as is possible for the analysis of changes in the admission rates. Changes in admission rates will be computed as the difference between observed rates in 1976 and 1977. It should be noted that these baseline data may be difficult to obtain, especially those dealing with the non-Medicare population.

All diagnoses selected for the study will be combined to provide a measure of the change in the rate of hospitalization. That measure will be a weighted average of the percentage changes in admission rates. The weights to be used will be based on the relative frequencies or incidences of those diagnoses under study in relation to all admitting diagnoses.

The difference in the estimated percentage changes in admission rates between the PSRO active areas and the non-active areas will be the primary evaluation measure of the impact of admission certification under PSRO. (Table 7, Item 1) Further, the total number of Medicube days of care multiplied by the ratio of this difference in percentage changes to the value one minus this difference will be an estimate of the unnecessary days of care averted through the AC process. (Table 7, Item 3)

Changes in Lengths of Stay

This analysis will be based on longitudinal studies of diagnostic or procedure specific average lengths of stay for cases certified for admission. Relative changes in average lengths of stay will be the primary impact measure because if some fraction of the days of care in Medicube hospitalizations are not medically necessary, an effective CSR program should at least

initially reduce the average lengths of stay through a reduction in the "unnecessary" component. (Other things being equal, an effective AC program should tend to lengthen the average length of stay by elimination of unnecessary, and most likely short, stays. Excessive lengths of stay, however, are not limited to cases with long lengths of stay so that in the absence of an extraordinarily effective AC program the net effect of concurrent review should in fact be to shorten average lengths of stay.)

The analysis will be based on changes in diagnostic or procedure specific average lengths of stay between 1976 and 1977. All diagnoses selected for the study will be combined to provide a measure of the change in the lengths of stay. This measure will be a weighted average of the percentage changes in lengths of stay. (Table 7, Item 2) The weights to be used will be based on the relative total days of care for all Medicube beneficiaries with respect to the individual diagnoses or procedures. (Discharges due to deaths will be excluded from the calculations of average lengths of stay.)

The difference in the estimated percentage changes in average lengths of stay between the PSRO active areas and the non-active areas will be the primary evaluation measure of the utilization impact of continued stay review under PSRO. The total number of Medicube days of care multiplied by the ratio of this difference in percentage changes to the value one minus this difference will be an estimate of the number of unnecessary days of care averted through the CSR process. (Table 7, Item 4)

In order to examine the uniformity of CSR impact two additional analyses will be performed using the data collected for this study. In the first, the individual diagnoses selected for the study will be grouped according to the following categories:

(1) surgical
(2) medical-surgical
(3) medical
(4) mental

Estimates of the relative changes in lengths of stay (Table 7, Item 2) will be computed for each of these more general diagnostic classes. The second analysis will involve grouping the observations according to whether or not multiple diagnoses were recorded. Estimates of the relative changes in lengths of stay will be computed for both groups. Significant differences between the values of these additional measures may indicate areas where CSR effectiveness can be improved.

Additional Quasi-Experimental Analyses

The results of the AC and CSR analyses will be checked for accuracy by comparing the change in utilization rates (expressed in terms of Medicube days of care per eligible) in the PSRO active areas to the change observed in the non-active areas. The difference between these two measures multiplied by the number of Medicube eligibles in the active areas in the second year will yield an estimate of days of care averted through the PSRO concurrent review process. This estimate should be consistent with the sum of the estimates from the AC and CSR analyses. (Table 7, Item 5)

The impact of these changes in utilization on Medicube expenditures will be estimated as the product of the average daily room and board charge for the PSRO area and the estimate of reduction of Medicube days of care. (Table 7, Item 6) This approach should give a more accurage estimate of savings than one based upon observed average costs per day since fewer services in addition to room and board are provided toward the end of hospital stays than are provided at the beginning. The estimate of AC savings will be biased downwards, but the next most plausible alternative approach (based on changes in admission rates and diagnostic specific imputed expenditures per admission) would be heavily biased upwards. The lower estimates are preferable because ambulatory care or long term care will be substituted for inpatient utilization averted through the AC and CSR processes, thus only part of the estimated savings will be realized. To the extent that changes in utilization induce price increases greater than those that would have occurred in the absence of concurrent review, these estimates will overstate the magnitude of savings. However, it is not possible at this time to estimate the probability of such an effect nor its magnitude.

An analysis and comparison of benefit cost ratios of concurrent review under PSRO and concurrent review under the utilization review regulations would be of great use in an examination of public policy in this area. Unfortunately such an analysis cannot be conducted in the context of the quasi-controlled study because (1) many methodological compromises would have to be made for the analysis, in particular, comparing the "products" of utilization review and PSRO given the additional focus on quality in the latter, and (2) difficulties in acquiring adequate data in non-active PSRO areas. (An analysis of variations in estimated benefit-cost ratios for active PSROs is described in the analysis of Net Savings.)

One final analysis will examine the impact of characteristics of the PSROs on the effectiveness of concurrent review. The ratio of days of care averted to Medicube days of care provided will be used as a dependent variable in a regression analysis. 4/ Policy variables included in the analysis are

4/ In the analysis of several of the issues in the Plan it is important to measure the individual impacts of several factors which jointly affect an indicator of program performance. In such instances regression analysis has been specified. This involves the use of statistical techniques which will identify the direction and magnitude of the various impacts to be examined, as well as the validity of the relationships under consideration. The relationships implied in the analyses are linear ones, however, where the data suggest a specific non-linear relationship, this can be substituted in the analyses. Similarly, where the data suggest the use of alternative multivariate techniques, such techniques can be used to supplement and to test the analyses currently specified in the Plan.

Because of the nature of the data to be used two particular techniques of regression analysis must be employed. The first involves the use of instrumental variables or two-stage least squares regressions. This will correct for intercorrelations among the variables under consideration which otherwise would reduce the precision of the results. The second technique involves weighting of the observations (usually by a measure of caseload). This will correct for differences in the accuracy of the estimated variances of the observations which otherwise would also tend to reduce the precision of the results.

Three classes of independent variables are identified in the description of each regression: policy variables, "qualifying" variables, and "literature" variables. Policy variables represent aspects of the PSRO system which are manipulable through policy decisions, e.g., delegated review authority, and unit review expenditures. "Qualifying" variables represent aspects of the PSRO system which cannot be manipulated through policy decisions but which must be taken into account when assessing PSRO experience. Examples are the number of hospitals in a particular PSRO area, and whether the PSRO area is in a single or multiple PSRO state. Certain other variables included in the analysis are designated as "literature" variables because they have been demonstrated in health services literature to be important in relationships of the types specified in the Evaluation Plan. Examples in this category are population density, and the number of hospital beds. Finally, certain variables which appear in the literature have been excluded. The major considerations in these exclusions were the additional cost of data collection and processing of the variables and the fact that some of these variables could not be well specified or were believed to be still in the realm of research. Examples are sociodemographic variables with respect to changes in utilization and physician specialty and training variables with respect to concurrent review denials.

the percentage of Medicube discharges treated in delegated hospitals and concurrent review expenditures per Medicube eligible. Qualifying variables include the number of hospitals in the PSRO area, the annual number of Medicube discharges, the percentage of Medicube discharges treated in hospitals affiliated with medical schools, and the major census regions. Literature variables include the area-wide occupancy rate, population density, and the ratio of the number of extended care beds to the population older than 65. The regressions will use weights based on the Medicube days of care in each area. (Table 7, Item 7)

Variations Across Institutions and Concurrent Review Models

Variation in approaches to concurrent review (e.g., preadmission certification or aternative percentile cutoffs for CSR) will be more evident within PSRO areas than between PSRO areas. Institutional comparisons will be necessary to identify which of these approaches are the most effective. While this situation will prevent comparisons based on population-based utilization rates it will facilitate an analysis which will also identify the impacts of institutional and environmental factors on the effectiveness of concurrent review.

This analysis will be performed twice, (at the completion of calendar years 1976 and 1978) and will be based on observations from individual institutions. Data for the analysis will be derived from PHDDS records and from intermediary and carrier records as necessary. Initially, all hospitals in active PSRO areas will be included.

The focus of the analysis will be on changes in Medicube days of care in each institution. The percentage change between each hospital's two most recent annual total of Medicube days of care will be used as the dependent variable in a regression analysis. Policy variables included in the analysis are concurrent review expenditures per Medicube discharge and dummy variables to represent delegated review authority and the various concurrent review model types. Qualifying variables include the PSRO cohort, 5/ the percentage change in Medicube eligibles, population density and the ratio of the number of extended care beds to the population older than sixtyfive. Literature variables include bed size, percentage change in bed size, ownership, the occupancy rate, the percentage change in average daily charges, and affiliation with a medical school. (Table 7, Item 8)

5/ PSRO cohorts will be defined by the stages of national PSRO program implementation. The original group of 13 conditional PSROs form the first cohort. Regression analyses which include the cohorts as dummy variables may identify differences between these groups of PSROs.

Extension Denials and Readmissions

The analysis of extension denials and readmission will be conducted as a special study to be initiated early in calender year 1977. The study will be conducted in a sample of PSRO areas stratified by region. Information needed for the analysis will be identified through examination of local PSRO records of denials and subsequent examination of PHDDS reords maintained at the local PSRO level. No individual identifiers will be reported in the analysis and all necessary steps will be taken to assure confidentiality.

The analysis will be based on readmission rates for the same or a related condition or complications. Readmission data will be gathered based on the 90 days following discharge and will be cross tabulated by (a) whether the length of stay for the first admission was under, at, or over the norm for that diagnostic category (and age and sex where necessary) and (b) whether or not an extension denial occurred in the case. Statistically significant changes in the proportions of these two categories will be monitored as will be the changes in the proportion of both categories to the total cases within each condition. If the proportion of cases being readmitted rises, it could be construed as an indication of untoward effects resulting from CSR, while its remaining the same could indicate the absence of such effects. Its decrease could be taken to be an indication of improved quality of care. If the proportion of cases being readmitted within the sub-group which were denied extensions rises, it could be construed as an indication of the inappropriateness of extension denial activities. A decrease in this proportion could be construed as an indication that extension certification is having its desired effect. The absence of any change could be interpreted as the absence of such effects.

As a further analysis of extension denials, frequency distributions of denials will be reported for the following discharge categories:

(1) Patient remained in institution, denial overturned on reconsideration or appeal;
(2) patient remained in institution, not eligible for reimbursement;
(3) patient discharged or transferred to lower level of care;
(4) patient discharged to home. (Table 7, Item 10)

Impact on Expenditures

The expenditure analysis described in the quasi-experiment section was based on the expenditure impact of PSRO relative to that of utilization review. An analysis of the absolute level of impact will also be of use, and such an analysis can be performed using data from all PSROs rather than just the PSROs in the quasi-experiment.

This analysis will be performed twice (at the completion of calendar years 1976 and 1978) and will be based on observations obtained from individual PSROs. Data for the analysis will be derived from PHDDS records, from Medicube eligible files, and from intermediary and carrier records as necessary. All active PSRO areas will be included in the analysis.

For every PSRO area an annual utilization rate will be computed for each of the two twelve month periods immediately prior to the study. These rates will be expressed in terms of Medicube days of care per eligible. The difference between these two rates multiplied by the eligible population in the second time period will yield an estimate of the total days of care averted through the concurrent review process in each area.

Information on the daily charge for room and board will be collected for each hospital in the PSRO area in order to compute a weighted average daily room and board charge for the area. (The weights to be used will be the total annual Medicube days of care for each hospital in the second time period.) The products of these average daily charges and the estimates of days of care averted, summed over the PSRO areas will yield an estimate of the impact on Medicube expenditures of changes in hospital utilization induced through concurrent review. (Table 7, Item 11)

The weighted average room and board charge is used on the assumption that, in the absence of PSRO activities, the estimated days of care averted could have been provided in any of an area's hospitals. The estimated "Savings" therefore must be based on each hospital's Medicube volume. The estimate will not reflect, however, the impact on expenditures of increases in the intensity of services, if any, that are induced by concurrent review.

Net Savings

The result of the previous analysis will be supplemented with data available from the PSRO MIS and contract reports to determine whether the estimated benefits of concurrent review exceed the costs.

Annual concurrent review expenditures (which will include an allocated portion of administrative costs) will be determined for each PSRO area to be used in the computation of an estimated benefit-cost ratio. If concurrent review has been an efficient system these ratios should be greater than one. (Table 7, Item 12)

An analysis of the variations in these benefit-cost ratios will be conducted to identify PSRO characteristics which have an impact on the efficiency of concurrent review. The estimated benefit-cost ratio will be used as the dependent variable in a weighted least squares regression analysis. (The weights to be used will be based on the annual number of Medicube days of care in each area.) Policy variables included in the analysis are the percentage of Medicube discharges treated in delegated hospitals and concurrent review expenditures per Medicube eligible. Qualifying variables include the number of hospitals in the PSRO area, the annual number of

Medicube discharges, and dummy variables to represent the PSRO's cohort. The area wide occupancy rate will be included as a literature variable as will the ratio of extended care beds to the population older than 65.

The estimated coefficient of the cohort variable will be of particular interest. If, in fact, PSROs reduce most or all unnecessary utilization in their beginning years, an estimated benefit-cost ratio based on changes in utilization will decline over time. A PSRO may function well, however, and exhibit a relatively low utilization rate rather than a large decrease in the utilization rate. Indeed, in the long run, the effect of concurrent review should be to maintain such relatively low utilization rates. In particular, special attention must be given to the first cohort of conditional PSROs. Many were experienced review organizations prior to becoming PSROs, and may have already achieved their impact.

2. Comments

   a. The assumption implicit in the analyses described above is that a change in admission rates can be used as the measure of AC impact. There are a number of other factors whose effects could be measured in order to assess the impact of the AC mechanism more accurately.

      One of these factors is the denial rate. In an effective system, the denial rate will be smaller than the change in admission rates and should decline gradually to some small percentage of total reviews. In an ineffective system the denial rate could well be greater than the change in admission rates as admissions are merely shifted among hospitals. In either case, an increase in the denial rate could be cause for concern.

      Unfortunately, even declines in certain diagnostic specific admission rates are not unambiguous indicators of AC effectiveness. The AC process may be evaded through changes in diagnosis status once the patient has passed through admission certification. Evidence that the AC process is being evaded, as measured by a substantial increase in the percentage of discharges with a different admitting diagnosis will indicate that particular PSROs, institutions, or practitioners need to be monitored more closely.

      A third factor relevant to the interpretation of AC effectiveness is the percentage of admissions granted certification as an exception. The potential effect of AC may be invalidated if admitting physicians are able to consistently override criteria for admission. The percentage of cases of medically necessary

hospitalizations which do not meet admission criteria should be stable. Increases in that percentage may signal another form of evasion of the AC process.

b. Another consideration in the interpretation of changes in admission rates is the expansion of HMO's and other prepaid health organizations. If hospital utilization is indeed lower for members of prepaid organizations, a switch to greater enrollment in such organizations should be accompanied by a decrease in admission rates. Marked changes in prepaid enrollment by the Medicube population may invalidate deductions about AC effectiveness based on simple changes in admission rates.

c. The assumption implicit in many of the analyses is that concurrent review will affect all diagnostic categories on the average as they do the sample categories. This assumption is more suspect on a local level than on the national level and various adjustments must be made for analyses of intra-PSRO variations. For example, when an individual PSRO or institution bases its concurrent review program on a select set of diagnoses, the diagnoses studied for the concurrent review analyses must be considered a subset of the select set rather than a subset of all diagnoses.

d. The analyses based on readmissions may be difficult to accomplish in certain institutions because the readmissions rates are so low. There are a number of ways of dealing with this difficulty. One way is to perform the analyses over longer time periods allowing the cases to accumulate. It was with this in mind that the analyses have been designed to be accomplished using semi-annual observations rather than quarterly ones. Instead, it might be necessary for the analyses to be based on annual observations to allow for a sufficient number of cases to accumulate.

   Another method for obviating this difficulty is to aggregate data across any of its cross-tabulable variables. Thus, all prior lengths of stay can be combined into one group (rather than keeping early discharges, ontime discharges and extended stay discharges separately) as can data for more than one diagnostic category, more than one hospital, etc. The problem in doing this is that the data cannot then be analyzed for differences between the categories within these factors.

e. CSR consists of decisionmaking tasks. When decisionmaking occurs, there is, of course, a chance for error. Two kinds of

error can occur: (a) patients who do not need to have stays extended are nevertheless retained in the hospital or (b) patients who should be retained in hospitals are discharged. Should CSR operate defectively in committing the first error, there is not way of detecting it and the case will not come to anyone's attention as being a review error. When the second type of error is committed, however, there are some indications that an error was made. For example, if the patient does not revert to ambulatory care, there is no way of detecting the error, but if he does, either (a) the later judgment of the ambulatory care physician or (b) the length of time that ambulatory care is necessary, may provide indications of a premature discharge. To make later judgments meaningful would probably require a mechanism to make sure that the in-patient attending physician and the post-institutional ambulatory care physician are not the same person. Some attempts at seeing whether the measurement of these errors is possible is properly relegated to the status of a research question. Whether lengthy post-institutional ambulatory care may also be used for detecting these errors is also properly a research question. If research results in a positive finding, some means of extracting this information from both out-patient clinic and private physician practice ambulatory care files should be incorporated into later versions of this evaluation strategy which include review of ambulatory care.

f. The advance designation of the diagnoses to be used in these analyses may induce a Hawthorne effect. For example, extra time and effort may be devoted to monitoring utilization in these diagnostic categories. As a result, it may be necessary to analyze utilization changes involving a small set of additional diagnoses which will not be designated at this time.

TABLE 7

EVALUATION MEASURES/DATA SPECIFICATIONS

Evaluation Measures	Data Elements	Specificity	Source	Recording Frequency
1. Relative change in admission rate (x)[1/] $x = \left(\frac{A_{p1}}{M_{p1}} - \frac{A_{p2}}{M_{p2}}\right) \div \frac{A_{p1}}{M_{p1}} - \left(\frac{A_{u1}}{M_{u1}} - \frac{A_{u2}}{M_{u2}}\right) \div \frac{A_{u1}}{M_{u1}}$ $x_d = \left(\frac{1}{k-1}\sum_{j=1}^{k}\left(\frac{A_{p1j}}{M_{p1j}} - \frac{A_{p2j}}{M_{p2j}}\right)^2 + \left(\frac{A_{u1j}}{M_{u1j}} - \frac{A_{u2j}}{M_{u2j}}\right)^2\right)^{\frac{1}{2}}$	A_{p1} = total # M^3 admissions in active PSRO areas in year 1 M_{p2} = total # M^3 eligibles in active PSRO in year 2 A_{u2} = total # M^3 admissions in non-active PSRO areas in year 2 M_{u1} = total # M^3 eligibles in non-active PSRO areas in year 1 j = index for the jth PSRO area	diagnosis PSRO area	PHDDS UHDDS SSA SRS HSA	Quarterly
2. Relative change in lengths of stay (y)[1/] $y = \left(\frac{D_{p1}}{A_{p1}} - \frac{D_{p2}}{A_{p2}}\right) \div \frac{D_{p1}}{A_{p1}} - \left(\frac{D_{u1}}{A_{u1}} - \frac{D_{u2}}{A_{u2}}\right) \div \frac{D_{u1}}{A_{u1}}$ $y_d = \left(\frac{1}{k-1}\sum_{j=1}^{k}\left(\frac{D_{p1j}}{A_{p1j}} - \frac{D_{p2j}}{A_{p2j}}\right)^2 + \left(\frac{D_{u1j}}{A_{u1j}} - \frac{D_{u2j}}{A_{u2j}}\right)^2\right)^{\frac{1}{2}}$	D_{p1} = total M^3 days of care in active PSRO areas in year 1 A_{p2} = total # M^3 admissions in active PSRO areas in year 2 D_{u2} = total M^3 days of care in non-active PSRO areas in year 2 A_{u1} = total # M^3 admissions in non-active PSRO areas in year 1 j = index for the jth PSRO area	diagnosis PSRO area	PHDDS UHDDS SSA SRS HSA	Annual
3. Relative days of care impact of AC[2/] $(x) \div (1-x-y) \cdot (D_{p2})$	x = relative change in admission rates (Item 1) D_{p2} = total # of M^3 days of care in active PSRO areas in year 2	PSRO area	PHDDS	Annual
4. Relative days of care impact of CSR[2/] $(y) \div (1-x-y) \cdot (D_{p2})$	Y = relative change in lengths of stay (Item 2) D_{p2} = total # of M^3 days of care in active PSRO areas in year 2	PSRO area	PHDDS	Annual

1,2/ Footnotes - see end of table

Evaluation Measures	Data Elements	Specificity	Source	Recording Frequency
5. Relative days of care impact of concurrent review = $M_{p2} \cdot \left((D_{p1} \div M_{p1} - D_{p2} \div M_{p2}) - (D_{u1} \div M_{u1} - D_{u2} \div M_{u2}) \right)$	M_{p2} = total # M^3 eligibles in active PSRO areas in year 2 D_{p1} = total # M^3 days of care in active PSRO areas in year 1 M_{u1} = total # M^3 eligibles in non-active PSRO areas in year 1 D_{u2} = total # M^3 days of care in non-active PSRO areas in year 2	PSRO area	PHDDS UHDDS SSA SRS HSA	Annual
6. Relative expenditure impact of concurrent review = $C_p \cdot D_p^*$	C_p = average daily room and board charge in a PSRO area D_p^* = estimated days of care impact of concurrent review (See items 1, 3, 5)	PSRO area	PHDDS intermediary and carriers	Annual
7. Impact of PSRO characteristics on effectiveness of concurrent review (Regression coefficients)	a. Estimated days of care impact of concurrent review b. M^3 days of care c. % M^3 discharges treated in delegated hospitals d. concurrent review expenditures per M^3 eligible e. # hospitals f. # M^3 discharges g. % M^3 discharges treated in hospitals affiliated with medical schools h. census region i. PSRO area wide hospital occupancy rate j. population density k. # extended care beds per population older than 65.	PSRO area	PMIS SSA SRS HSA	Annual

Evaluation Measures	Data Elements	Specificity	Source	Recording Frequency
8. Impact of institutional characteristics and concurrent review models (regression coefficients)	a. % change in annual M^3 days of care b. concurrent review expenditures per Medicube admission c. delegation of review authority d. AC model type e. CSR model type f. PSRO cohort g. percentage change in M^3 eligible population h. population density i. # beds j. change in # beds k. ownership l. occupancy rate m. percentage change in average daily charge n. affiliation with medical school o. # extended care beds per population older than 65	hospital	PHDDS intermediary and carrier records	Annual
9. Change in readmission rates = $R_1 \div M_1 - R_2 \div M_2$	R_1 = # M^3 readmissions in first time period M_2 = # M^3 discharges in second time period	a. PSRO area b. cases with extension denial c. cases admitted prior to initial certification date	special study	Semi-annually
10. Frequency distribution of extension denials	# cases with extension denials	a. patient remained in institution, denial overturned on reconsideration or appeal b. patient remained in institution, not eligible for reim-	special study	as necessary

Evaluation Measures	Data Elements	Specificity	Source	Recording Frequency
		bursement c. patient discharged or transferred to lower level of care d. patient discharged to home		
11. Expenditure impact of concurrent review (B)= $C_{p2} \cdot M_{p2} \cdot (D_{p1} \div M_{p1} - D_{p2} \div M_{p2})$	C_{p2} = average daily room and board charge for hospitals in PSRO area M_{p2} = total # M^3 eligibles in year 2 D_{p1} = total # M^3 days of care in year 1	PSRO area	PHDDS SSA SRS HSA intermediary and carrier records	Annual
12. Estimated benefit-cost ratio = $B \div E$	B = expenditure impact of concurrent review (see item 11) E = expenditures for concurrent review	PSRO area	PMIS evaluation studies	Annual
13. Impact of PSRO characteristics on benefit-cost ratio (regression coefficients)	a. estimated benefit-cost ratio (item 12) b. % M^3 discharges treated in delegated hospitals c. concurrent review expenditures per M^3 eligible d. # of hospitals e. # M^3 discharges f. PSRO cohort g. PSRO area wide hospital occupancy rate h. # extended care beds per population older than 65	PSRO area	Evaluation studies PMIS	Annual

Evaluation Measures	Data Elements	Specificity	Source	Recording Frequency
14. CSR impact on extensions	E_1 = # M^3 discharges with one or more extension in year 1 M_2 = # M^3 discharges in year 2 K = index of the kth PSRO area	PSRO area	PHDDS	Annual
a. $I = \left(\frac{E_1}{M_1} - \frac{E_2}{M_2}\right) \div \left(\frac{1}{k-1}\sum_{j=1}^{k}\left(\frac{E_{1k}}{M_{1k}} - \frac{E_1}{M_1}\right)^2 + \left(\frac{E_{2k}}{M_{2k}} - \frac{E_2}{M_2}\right)^2\right)^{\frac{1}{2}}$				
b. $s = \left(D_1 - D_2\right) - \left(\frac{1}{E_1-1}\sum_{j=1}^{E_1}\left(D_{1j}\right)^2 - \left(D_1\right)^2 + \frac{1}{E_2-1}\sum_{j=1}^{E_2}\left(D_{2j}\right)^2 - \left(D_2\right)^2\right)^{\frac{1}{2}}$	E_1 = # M^3 discharges with one or more extensions in year 1 D_2 = average disparity between actual length of stay and initial LOS certification in cases with extensions in year 2	PSRO area	PHDDS	Annual

Footnotes - Table 7

1/ The assumption underlying the quasi-experimental analyses is that the impact of PSRO activities can be estimated as the difference between the annual (proportional) changes in utilization observed in the PSRO active areas and those changes observed in non-active areas. These differences must be statistically significant for the rest of the analysis to be meaningful. The standard deviations of these estimates are presented as X_D and Y_D.

The analyses involving items 1 through 4 rely upon a separation of PSRO impact into two components: one due to changes in admission rates and one due to changes in lengths of stay. The separation derives from a mathematical relationship between the product of two factors and the two individual factors, viz., the proportional change in the former is equal to the sum of the proportional changes in the latter.

The attribution to AC activities of the component due to changes in admission rates relies upon the mild assumption that CSR activities will have little or no impact on admission rates. The attribution solely to CSR of the component due to changes in lengths of stay is a stronger assumption, however it is incorrect only to the extent that AC activities more than proportionately reduce the incidence of relatively short lengths of stay. To that extent the measure of AC impact will be biased upward and that of CSR biased downward. The biases, however, differ only in sign so that the overall estimate of impact should not be a biased one.

2/ Estimation of the days of care impact of concurrent review requires a comparison involving two mutually exclusive states of the world. Utilization in an active PSRO area must be compared to the utilization that would have occurred in the same area in the absence of PSRO activities. The latter, obviously, can not be observed. It can be estimated, however, on the assumption that it differs from the observed utilization by the proportions x and y (Items 1 and 2). The days of care impacts are thus functions of x, y, and the observed utilization, as specified in Items 3 and 4.

Issue #2: IS CONCURRENT QUALITY ASSESSMENT (CQA) - AS CARRIED OUT IN THE PSRO PROGRAM AS A FORM OF CONTINUED STAY REVIEW - AN EFFECTIVE METHOD OF ASSURING THE APPROPRIATE UTILIZATION OF SERVICES (DIAGNOSTIC AND THERAPEUTIC PROCEDURES)?

A. Sub-issues

1. To what extent has CQA (focused on assuring compliance with "essential" criteria elements) resulted in improvements in patient outcomes?

2. To what extent has CQA resulted in a reduction of deviations from criteria and standards?

3. What is the cost of CQA?

Rationale:

One variant of continued stay review is a detailed assessment of the quality of care provided to Medicube beneficiaries. It is expected that, where adopted, CQA will take the form of an evaluation of patient management with respect to a particular set of criteria elements. Under such a procedure, appropriate utilization of services will be defined by the scope of the locally adopted criteria sets used for CQA.

CQA itself, as a quality assurance mechanism, is important because of the widespread belief that assuring compliance with selected criteria elements will have a beneficial impact on patient outcomes. It will be important for the PSRO program to determine the extent to which such a relationship exists.

Few PSROs are expected to initiate CQA activities in the program's early stages, but it will be important to assess these efforts to ascertain whether CQA can be an effective mechanism to assure compliance with the criteria.

B. Management/Policy Decisions

The analyses of this issue will provide essential information for decisions to:

1. Change policy with respect to the continued and/or increased promulgation of CQA,

2. Advocate changes in the type of criteria used in CQA,

C. Analysis

The analyses of the sub-issues in this area will be based on information derived from a subset of the PSROs that initiate CQA activities. The number of such PSROs is expected to be quite small. Foremost among them will be the PSROs participating in the experiments of the Private Initiative in PSRO (The Kellogg Foundation Study). These PSROs will be the primary source of data on the effect of CQA on patient outcomes. In addition to such information, the Private Initiative PSROs will provide information on compliance with the criteria and on the cost of CQA. These latter two types of information will also be obtained from all other PSROs which perform CQA activities and which are surveyed for these analyses.

Health Outcomes

The Private Initiative experiments will be conducted in five PSRO areas during calender 1975 and will include 68-80 hospitals. Certain hospitals from this group will initiate CQA activities, while some of the others will act as "CQA Controls." The medical staffs of the CQA hospitals will adopt the policy of requiring compliance with essential criteria for seven selected diagnoses:

(a) Acute myocardial infarction,
(b) Bacterial pneumonia,
(c) Bacterial urinary tract infection,
(d) Acute gastroenteritis in children
(e) Acute upper gastrointestinal bleeding,
(f) Acute appendicitis, and
(g) Cholecystitis and Cholelithiasis.

In addition to information on patient management compliance with the essential criteria, information on the immediate outcomes of hospital care will be collected for each Medicube patient hospitalized for any one of the seven diagnoses. To be included are data on preventable complications not prevented and clinical and functional status at discharge. Finally, patient information will include an indication of whether or not there was a readmission to a hospital for the same complaint within 90 days of the original discharge. These outcome measures will be converted to incidence measures, i.e., percentage of cases where patient is discharged with functional status equal to or better than a threshold status chosen by the Initiative designers. These incidence measures will form the bases for comparisons between the CQA hospitals and the controls. (Table 8, Item 1) If CQA has a beneficial impact on patient outcomes, the CQA hospitals should have a significantly higher percentage of cases discharged at threshold status or higher, and should have significantly lower percentages of both (a) cases with preventable complications that have not been prevented and (b) readmissions within 90 days.

Compliance with Criteria and Standards

These analyses will be completed in calendar year 1977. Compliance with the criteria will be measured in terms of deviations from the criteria and standards. The measure of deviation will be the percentage of cases at variance from the criteria and standards rather than a summed magnitude of deviation. A more sophisticated analysis, using summed magnitudes of deviations, would require a methodology for weighting deviations based on both individual criteria elements and distinct criteria sets. Such methodology is not available at this time.

It is important to note at this point that the percentage of deviant cases will rarely, if ever, be zero. This is the case if only because of normal variation in (a) the general health of patients, (b) the severity of their illnesses, and (c) the timing of their entry into the medical system with respect to the course of their disease. In fact, if there are no cases that are reported which are not in compliance with a particular criteria set, that criteria set should be immediately suspect. The percentage of deviant cases should be small, however, in an effective system, a reduction in the percentage of cases not in compliance with the criteria will be an indicator of an effective CQA system.

Criteria sets with more than one element present a measurement problem in that not all criteria elements are of equal importance. That problem will be addressed as follows:

(a) Where CQA system criteria are based on so-called critical or essential criteria elements, non-compliance with any one of the elements is sufficient to designate patient management as deviant from criteria and standards.

(b) Where a criteria set does not designate critical elements, local PSRO judgment will be used to designate a minimum compliance level in terms of the percentage of criteria elements which must be complied with for appropriate patient management. Cases not meeting that level will be designated as deviant.

(c) PSROs which adopt systems with weights assigned to each criteria element will convert compliance measures to percentages by computing the ratio of actual compliance to potential compliance.

Reductions in deviations from criteria and standards will be measured by comparisons to matched institutions without CQA or by comparisons to prior time periods. (Table 8, Item 2) The former approach will be used in the case of the Private Initiative experiments, i.e., the CQA hospitals will be compared to the controls in terms of the percentages of non-compliant cases.

Comparisons to prior periods will be difficult, because only in a very select number of well established review organizations does there exist baseline data. This problem will be addressed by either of two approaches. The first will be to perform an MCE on the particular diagnosis/or problem for which CQA activities are planned prior to the initiation of CQA. That MCE will utilize the planned CQA criteria and standards, and should be based on the patient management experience (of no less than six months duration) immediately prior to the initiation of CQA activities. The MCE results will be interpreted in terms of the percentage of cases studied that were found not in compliance with the planned CQA criteria and standards, and reductions in deviations will be measured by comparison to those results. This approach has the advantage that it may be possible to confirm that CQA activities can be of potential benefit for the particular diagnosis or problem in question. Where this approach is not used, the first six months of CQA for a particular diagnosis problem will be designated as the baseline period.

Cost of CQA

There are two types of cost statistics associated with CQA: the cost of providing CQA services and changes in the cost of medical care due to utilization changes induced by CQA. (An analysis of the latter is described in the research section of Summative Issue 5.) The former will include the costs of criteria development for CQA and CQA review coordinator and other personnel costs and associated expenses, but not the cost of any preparatory MCEs. These costs should be normalized by dividing the cost of CQA for a particular diagnosis/problem by the number of discharges with that diagnosis/problem which were actually reviewed with respect to the CQA criteria and standards. (Table 8, Item 3)

TABLE 8

EVALUATION MEASURES/DATA SPECIFICATIONS

Evaluation Measures	Data Element	Specificity	Source	Recording Frequency
1. Outcome Measures				
a. % of cases with preventable complications not prevented	a. # of cases with preventable complications not prevented	diagnosis institution	Private Initiative in PSRO	Quarterly
b. % of cases discharged at threshold functional status or higher	b. # of cases discharged at threshold functional status or higher			
c. % of cases readmitted within 90 days	c. # of cases readmitted within 90 days			
	d. # of cases			
2. Change in deviations from criteria and standards = [(# deviant cases) ÷ (# cases reviewed by CQA) - (# deviant cases in comparison institution or time period) ÷ (# cases reviewed by CQA in comparison institution or time period)]	a. # deviant cases b. # cases CQA reviews c. % deviant cases in comparison institution/ time period	diagnosis institution	Private Initiative in PSRO supplemented by a special study	Semi-annual

(continued on next page)

Evaluation Measures	Data Element	Specificity	Source	Recording Frequency
÷ square root [(# deviant cases) x (# compliant cases) ÷ (# cases reviewed by CQA)^3 + (# deviant cases in comparison institution or time period) x (# compliant cases in comparison institution or time period) ÷ (# cases reviewed by CQA in comparison institution or time period)^3]				
3. CQA cost per review	a. CQA cost b. # cases CQA review	diagnosis institution	Private Initiative in PSRO supplemented by a special study	Semi-annual

Issue #3: IS RETROSPECTIVE HEALTH CARE REVIEW, AS CARRIED OUT IN THE PSRO PROGRAM, AN EFFECTIVE METHOD OF ASSESSING THE QUALITY AND APPROPRIATENESS OF THE UTILIZATION OF SERVICES?

A. Sub-Issues

1. How effective are the methods employed by the PSROs (including institutional, practitioner and patient profiling) for identifying problem areas that require further assessment by MCE studies?

2. Are adequate methodologies being utilized in the performance of MCE studies?

3. To what extent have MCE studies effected corrective action?

4. Are some MCE models more effective and do they cost less to implement than others?

Rationale:

The purposes of MCE studies are to detect and correct conditions that are resulting in reduced quality of health care and/or inappropriate utilization of health care services delivered under Medicube programs. To achieve these objectives, each MCE should include the following steps:

1. Problem Detection. Use patient, physician, or institutional profiles, other review activities, or the judgment of the MCE committee and other medical care personnel to detect the problems that should be subjected to MCE study.

2. Problem Selection. The problems detected should be weighted so that the most important, in terms of local impact (health outcome and cost), are chosen for study.

3. Study Design. The MCE study should be designed so that it is methodologically sound, free of bias, and the results can be used in proposing solutions, if necessary, to medical or administrative procedures that the MCE study demonstrations are in need of correction.1/

1/ The conduct of the study may require the utilization of criteria and standards which, in most cases, should have already been formulated as a result of other PSRO activities. If such criteria and standards are not already available, the additional step of their formulation must be added before this step is undertaken.

4. Conduct of Study. The MCE study should be carried out in consonance with the study design.

5. Analysis of results/Suggestions for Change. The results should be analyzed and reported. The analysis should include suggestions, where appropriate, for changes in medical and/or administrative procedures that will improve the quality of patient care, and/or the effective and efficient use of services.

6. Change Implementation. 2/ Where appropriate, changes should be instituted.

7. Evaluation of Change. A follow-up study should be conducted to determine whether, and to what extent, the changes have had the desired effects. The evaluation itself might consist of a re-run of Steps 4 and 5 above after the change has been under implementation for a long enough period of time to have had an effect.

B. Management/Policy Decisions

The analysis of this issue will provide essential information for decisions to:

1. Modify the regulations that deal with the way MCEs are to be conducted;

2. Offer additional technical assistance in the conduct of MCEs;

3. Conduct additional special studies;

4. Disseminate some MCE findings amongst all PSROs;

C. Analysis

The evaluation of this issue requires a technology in health outcome assessment which currently is not sufficiently advanced to allow measurement of effectiveness in many instances. The following analytical methods, therefore, may not be adequate for the evaluation of MCE

2/ The word "change" will be used throughout the discussion of this issue. It refers to structural or procedural changes or changes in continuing education that are recommended as the result of an MCE study.

studies. They do, however, represent the state-of-the-art in evaluation and should be reassessed as to their merit after an initial application.

The sub-issues outlined above divide themselves over the seven steps required for an MCE study. The measurement of how effectively and efficiently these steps are accomplished, then, provides the basis for the analysis of this issue.

Since there are many cooperative arrangements under which MCEs are allowed to be conducted, it is difficult to predict the total number of MCEs per year that will be carried out. The number expected, however, is well over one thousand per year when the program is fully implemented. Such a large number of studies would make a detailed evaluation of each study prohibitively expensive and time consuming. On the other hand, to avoid examining some MCEs in a detailed fashion, would result in leaving several important evaluation questions unanswered. It is therefore necessary to use a combined approach in which (a) the processes being used in all MCEs are characterized and compared with the objectives of the program, and (b) a detailed evaluation of a sample of MCEs is carried out.

The first of these approaches will consist of analyzing data provided through the PMIS, namely:

(a) An MCE study abstract describing the characteristics of the basic MCE study, its results and recommended changes;

(b) An MCE Restudy Report describing the changes, if any, that have occurred since the MCE study was carried out; and

(c) An MCE Study Status Report describing each PSRO's MCE study program by listing the studies and their state of completion.

This approach will be used to (1) evaluate the problem identification and problem selection process, and (2) characterize the MCE studies with respect to the variety of techniques utilized and problems addressed.

The second approach will be pursued through site visits. These visits will utilize the information maintained by PSROs to document the MCEs as well as that gained from interviews with those PSRO and institutional staff that were involved in the MCE studies.

The purposes of the site visits are twofold:

(a) To evaluate elements of MCEs (e.g., methodology) that cannot be evaluated through abstracts;

(b) To verify that the MCE study and restudy data being placed into the PMIS are accurate (and to understand the inaccuracies if there are any).

Effectiveness of Problem Identification and Selection

This sub-issue will be evaluated in three steps on an annual basis. The first step will consist of the preparation of frequency distributions of the following information:

(a) Problems studied - a schema for classifying MCE topics and descriptions into problem categories will be developed after some experience with the types of problems that are chosen for study. It is anticipated that after the schema is developed, MCEs will be reported with the categories already coded on the abstract forms.

(b) Specialties and/or departments - a schema will be developed for classifying and coding studies by the specialties or departments involved.

(c) Problem source - the categories for this variable will be:

- profile analysis
- concurrent review
- other MCE study
- analysis of medical records
- high volume of incidence
- perceived need by staff
- prearranged PSRO plan
- other (specify)

(d) Study scope - The categories for this variable are:

- national
- regional
- PSRO-wide (by type)
  - State-wide
  - multiple county
  - other (single county, single city, or partial city)
- delegated hospitals
  - multiple institutions
  - single institutions

These distributions will be used to detect patterns with respect to problems, sources, specialties/departments, and scopes. The results of this analysis will be used to redirect MCE study efforts. (Table 9, Item 1).

The second step will consist of a potential effectiveness criteria comparison with the problems being studied. To perform this study, a random sample of no less than 10% of all MCE study abstracts submitted during one year will be selected. This sample of abstracts will be reviewed by a physician panel. The panel will be constituted of members with a great diversity in the geographical and institutional settings in which they gained their clinical experience. Using four separate scales, one for each of the criteria, each member of the panel will rate each abstract in the sample. The four criteria are:

(a) Potential - the problem is in an area where change is possible.

(b) Morbidity - the degree to which the study addressed a problem, which if solved, would decrease the seriousness of an illness.

(c) Cost - the actual or estimated changes in costs that could result if some type of change in procedures, practices, or organization were instituted, or additional equipment or physical plant acquired.

(d) Frequency of Occurrence - the number of admissions affected or the total number of times an event occurs or a diagnostic or therapeutical procedure is performed.

It may be necessary to augment the abstract data with survey data on the last two of these criteria to assure that accurate and sufficient information is available to the panel.

The rating procedure employed will not require that every study satisfy all four criteria in order to receive a high effectiveness rating. Also, it is recognized that there is some inherent error in having physicians rate the importance of an MCE by reviewing the problem under study with a study abstract. Individual studies, however, are not the focus of this evaluation issue and there is no intent to aggregate the ratings on an individual hospital or PSRO basis. Rather, the purpose of this issue is to detect patterns that are emerging as well as to arrive at some overall assessment of the MCE identification and selection process on a national, program-wide basis. By using a panel and aggregating the data across all PSROs, small rating errors can be expected to wash out.

To determine the overall effectiveness of problem identification and selection for the MCE studies performed during the evaluation period, then, two measures will be computed. The first measure is the average of the individual topic ratings and the second, the ratio of the number of MCE studies resulting in some corrective action being taken to the total number of MCE studies. (Table 9, Item 1)

The third step will consist of using the ratings derived under step two above, to evaluate problem sources. Mean ratings will be computed for each problem source, and these means compared to determined the quality of the MCE studies generated by each source. (Table 9, Item 1e)

Methodological Adequacy

During the early phases of each PSRO's development their initial concern will be to get some MCEs started. Because these studies may represent initial PSRO and hospital endeavors in retrospective studies, the level of methodological design can be expected to vary from PSRO to PSRO. The purpose of this step is to assess the degree to which the study designs reflect the need for additional technical assistance, as well as determine what the nature of that technical assistance ought to be. To the extent that it may also reflect the difficulties that PSROs may be having in carrying out the studies under existing regulations, it will also provide guidance as to how those regulations should be modified. Again, the intent of this issue analysis is not to evaluate the individual PSRO, and the analysis will be based on an aggregation of the data at a national, program-wide level. A secondary purpose of this issue analysis is to verify the accuracy of the MCE part of the PMIS data base.

To perform this analysis it will be necessary to conduct on-site visits. In some instances the studies under review will be those that were conducted by individual hospitals. In those cases, all the data that are needed for this analysis will be collected by working through the PSRO.

A sample of PSROs will be chosen for biannual site visits. During the site visits the following two steps will be undertaken.

(a) Examination of MCE Procedures

Through the examination of MCE documentation and interviews with PSRO and institutional staffs, the procedures used for the conduct of MCEs will be evaluated. Since the evaluation will be conducted on MCEs with a wide diversity of subject matter and methodological approaches, the evaluation methodology must be based on judgments. The types of judgments which must be made require expertise from persons with a number of different technical backgrounds. Therefore a site visit panel will be formed for conducting these evaluations. The panel will be composed of experimental methodologists/statistical analysts, medical records specialists, hospital administrators and clinicians.

(b) Data Verification

A sample of MCEs will be chosen from each of the sites visited. The abstract and restudy reports will be compared to the on-site study documentation to determine how accurately they represent the MCE study that was reported. The outcome of this task may either be (1) suggestions for modification of the forms, instructions and reporting procedures if inaccuracies are due to miscommunication, or (2) suggestions for increased technical assistance and monitoring if the inaccuracies are due to inabilities to carry out MCE studies properly.

Since the evaluation of this issue is to be (a) accomplished by means of special studies, (b) carried out by teams of personnel who will have to provide the detailed designs of the evaluations they will perform, and (c) based on MCE studies which may assume a variety of subjects and methodologies, only general guidelines for the analysis can be included in this plan. Based on these guidelines, a plan for the evaluation of this issue will be developed detailing the procedures to be used during the evaluation period. The plan should consist of at least the following elements:

a. Number and qualifications of personnel comprising the evaluation teams;

b. Designation of the PSRO sites to be visited;

c. General procedures to be followed by the evaluation teams, including the way that either PSROs or MCEs are to be sampled for evaluation purposes; and

d. The nature of the report to be made by the evaluation teams. During the site visits the elements of the MCE design that will be reviewed are:

    a. The measurements (e.g., the dependent variables) that are taken;

    b. The sample size;

    c. The sampling method;

    d. The controls that are utilized;

    e. Potential biases;

f. The manner in which the data were reduced and analyzed.

The same type of experts can review the procedures used for the study. The factors to be considered here are:

a. Personnel involved in the study and how they are used.

b. Source of the data.

c. Measurement instrument/records.

It should be pointed out that MCEs are not intended to be laboratory controlled studies and in reviewing the MCE studies the panel is not expected to use journal level criteria in assessing the methodological approaches used. Rather, they will be provided with guidance to make their assessments on the basis of whether the design of the study would have reasonably permitted the drawing of the intended conclusions. (Table 9, Item 2b).

Effectiveness of MCE's in bringing about change

The basis for this analysis will be a sub-sample of those MCE studies completed during the evaluation period that have resulted in some corrective action. MCE study abstracts and restudy abstracts will provide the data source. The sample will be stratified by PSRO characteristics (e.g., size, population density, and region).

For each study in this sample, the corresponding restudy abstract will be rated by a panel of experts to determine the extent to which the recommended corrective action has been successful in achieving its objective(s). For studies which focus on changes in medical practice, the rating scale will be based on compliance to the recommended corrective action. In some cases this assessment may require communication with the PSRO in order to obtain sufficient information for the judgment. A measure of the effectiveness of MCE studies should consider both the level of success and total impact (cost changes and patient outcome) of the studies. Impact, however, cannot be adequately measured. The current state-of-the-art in outcome measurement methodology is primitive, at best. Furthermore, the results of recommended and implemented corrective actions do not necessarily affect only inpatient care. The effectiveness measure that will be used is the ratio of the number of MCE studies which have resulted in some corrective action (weighted by their level of success) to the total number of the MCE studies which have resulted in some corrective action. (Table 9, Item 3).

Effectiveness and Relative Costs of MCE Study Models

Because the PSRO program allows considerable flexibility in the conduct of MCE studies, it is highly likely that a number of different MCE study models will be utilized by the PSROs and hospitals. To evaluate the effectiveness of these models the following steps will be performed:

1. A survey of the PSROs will be conducted to identify the most frequently used types of MCE study models. These models will be grouped into major model types.

2. For each major type MCE model identified, a sample of studies will be drawn from the PSROs. Priority will be given to studies which deal with the small problem or topic but under different model types. This approach will greatly strengthen the comparisons between major model types.

3. Using the same methodology as described in the effectiveness analyses above, each MCE study selected will be analyzed to determine the level of success achieved.

4. The model types will be compared on the basis of a measure of their relative effectiveness. This measure will be computed for each model type as the ratio of the number of MCE studies (for model type) weighted by their level of success to the total number of MCE studies using that model (Table 9, Item 4).

5. From each of the PSROs which are chosen to represent a model type, a sufficient level of effort information will be gathered to form a cost estimate for each model type. The most effective model types that result from the analyses described under paragraphs 1-4 above will be compared to determine whether the effectiveness associated with those models derive in part from any unwarranted cost factors.

Table 9

EVALUATION MEASURES/DATA SPECIFICATIONS

Evaluation Measures	Data Elements	Specificity	Source	Recorded Frequency
1. Problem Detection and Selection		Problem classification		
a. Frequency distributions of problems studied	a. Problems studied		PMIS	Annual
b. Frequency distribution by specialties/departments	b. Specialties/Departments involved	Specialty/ Dept. classification	PMIS	Annual
c. Frequency distribution of MCE studies among problem sources	c. Problem sources		PMIS	Annual
d. Frequency distribution of MCE studies by elements of program being studied	d. Scope of study		PMIS	Annual
e. Effectiveness				
(1) Average Topic Ratings (ATR) ATR = Sum of topic ratings ÷ # of topics rated	Topic ratings # of topics	MCE Study	Special Study	Annual
(2) Detection Effectiveness (DE) DE = # studies resulting in corrective action ÷ Total # of MCE studies	# studies resulting in corrective action # MCE studies	MCE Study	PMIS	Annual
2. Methodological Soundness				
a. Discrepancies between PMIS data and either MCE study records or interviews with PSRO or hospital staff	a. Elements of the various reporting form	MCE Study	Special Study	Annual

Evaluation Measures	Data Elements	Specificity	Source	Recording Frequency
b. Agreement of MCE methodology with accepted design theory and practice	b. (1) measurements used (2) sample size (3) sample method (4) use of controls (5) biases (6) data reduction and analysis (7) types and use of personnel conducting study (8) data source(s) (9) measurement instruments and records	MCE Study	Special Study	Biannual
3. Effectiveness of Change (EC) = #MCE studies resulting in corrected action · level of success ÷ #MCE studies resulting in corrective action	# of MCE studies resulting in corrective action Ratings of level of success	MCE Study (stratified by PSRO characteristics) that resulted in corrective action	PMIS	Annual
4. Effectiveness of MCE Study Models Comparison of Models' effectiveness ratings [EC model A - EC model B (thru N)] Comparison of Models' cost factors [CF model A-CF model B (thru N)]	# of MCE studies in sample resulting in corrective action Ratings of level of success Models' levels of effort	MCE Study	PMIS	Annual

Issue #4: HOW EFFECTIVE ARE THE VARIOUS CORRECTIVE MECHANISMS APPLIED TO INSTITUTIONS OR PRACTITIONERS FOR CORRECTING INAPPROPRIATE UTILIZATION OF SERVICES AND/OR IMPROVING THE QUALITY OF CARE?

A. Sub-issues

1. What has been the incidence of use of various corrective mechanisms relating to concurrent review?

2. What has been the impact of concurrent review denials and special concurrent review requirements, (e.g., preadmission certification), on the incidence of inappropriate utilization of services?

3. Have recommendations by PSROs for continuing education had beneficial impacts on individual physician performance?

4. Have recommendations for organizational changes in hospitals (as a result of PSRO activities) led to a decrease in inappropriate utilization of services and/or improvements in quality?

5. What has been the incidence of section 1160 (b) sanctions, and what has been the impact of such sanctions?

Rationale:

It is the function of a PSRO not merely to assess the appropriateness of the utilization of health services and the quality of these services but also to use its authority and influence to assure that health services are appropriately utilized and are of sufficient quality.

While it is expected that much of the PSRO corrective impact will be achieved through informal (and unrecorded) physician contacts there are available to PSROs a number of formal corrective mechanisms. These include :

(a) concurrent review denials;
(b) special review requirements such as preadmission certification or a requirement that all proposed services of a particular practitioner be reviewed by a physician advisor ("full concurrent review");

(c) MCE recommendations for continuing education; and
(d) other MCE recommendations for structural changes such as physical changes in hospital organization or revisions of hospital privilege procedures.

The ease with which the appropriateness of utilization can be increased is a function of the effectiveness of these corrective mechanisms.

In addition, there are sanctions available to the Secretary which can be invoked in severe instances. It is also important to measure the incidence and to assess the effectiveness of these sanctions as corrective mechanisms.

B. Management/Policy Decisions

The analysis of this issue will provide essential information for the decisions to:

1. Provide technical assistance with respect to corrective mechanisms.

2. Recommend alternative mechanisms or recommend that emphasis be placed on specific mechanisms.

3. Recommend legislative or administrative changes in the program.

C. Analysis

Incidence of Concurrent Review Corrections

Analyses of the first two sub-issues will be conducted as two special studies - one at the completion of calendar year 1977 and one at the completion of calendar year 1979. Each study will involve observations from all PSROs which have had at least two years experience beyond the planning stage. To assure confidentiality of the findings, denial rate statistics and other measures of the incidence of corrective actions will be computed at the PSRO level. Reports of the analysis will not identify any individual PSRO.

In each of the PSRO areas in the study the different variations of special requirements for concurrent review will be enumerated. (Examples are preadmission certification, full concurrent review, required consultations, etc.) Measures of both the availability of these mechanisms and the incidence of their use will be determined by geographic region and for the nation as a whole. (Table 10, Item 1) Pre-PSRO experience with review organizations suggests that the use of formal concurrent review corrections will be infrequent. This should not invalidate the results of the second phase of the study since the methodology to be employed is sensitive to small values.

Impact of Concurrent Review Corrections

The next phase of the study will be to identify all physicians in each PSRO area in the study who have been recorded as either a Medicube admitting physician or attending physician for at least ten proposed hospitalizations in each of the two fiscal years immediately preceding the study. Excluding physicians with nine or fewer Medicube patients will eliminate from the study those physicians with only a minimal participation in the Medicube inpatient programs and will increase confidence in denial rate statistics computed for physicians included in the study.

In each PSRO area a four percent sample will be drawn from all physicians not excluded from the study. In addition, any other physician whose AC denial rate or extension request denial rate is greater than that of ninety-nine percent of all physicians in the area will be added to the study. This will allow a specific examination of the impact of concurrent review denials on those physicians whose denial rates appear to be well in excess of their peers.

The total sample should be somewhat less than five percent of all physicians not excluded from the study. The following information much of which can be derived from information in physician profiles will be collected on each physician in the sample:

(a) AC denial rate in each year - computed as the ratio of a physician's AC denial to his proposed admissions,
(b) number of Medicube admissions proposed in each year,
(c) extension request denial rate in each year - computed as the ratio of a physician's extension request denials to the total of his extension requests,
(d) number of Medicube extension requests in each year,
(e) special review requirements in each year,
(f) continuing education requirements in each year,
(g) a variable to indicate whether the physician's AC denial rate is above the ninety-ninth percentile,
(h) a variable to indicate whether the physician's extension request denial rate is above the ninety-ninth percentile,
(i) PSRO membership status,
(j) the PSRO area-wide average AC denial rate for the two years,
(k) the PSRO area-wide average extension request denial rate for the two years,
(l) the percentage change in the PSRO area-wide AC denial rate from the first year to the second,
(m) the percentage change in the PSRO area-wide extension request denial rate from the first year to the second, and
(n) the year the PSRO first was granted conditional status.

All of the observations in the sample, without physician or PSRO area identifiers, will be collected for use in a regression analysis. The change in AC denial rates and the change in extension request denial rates (Table 10, Item 2b) will be used as dependent variables in weighted least squares regression equations. (The individual physician's caseloads will be used in determining the weights.) Policy variables included in the analysis are the dummy variables for special review and continuing education experience. Qualifying variables include PSRO membership status, the dummy variable for denials at the ninety ninth percentile, the PSRO denial rate and the annual change in that rate, and the PSRO cohort.

Continuing Education

The analysis of the effectiveness of recommended continuing education as a corrective mechanism will be conducted after at least thirty PSROs have had two or more years of experience beyond the planning phase. The collected MCE study Abstracts and Restudy Abstracts will be examined to identify those MCEs which recommend continuing education and for which a restudy has been completed. (Table 10, Item 3a) A large, random sample of these abstracts stratified by region will be used to identify MCEs for further study.

A special survey will be conducted to examine the actual MCE study findings and restudy findings. The survey will determine whether the findings give quantitative evidence of corrected performance. (Table 10, Item 3b) No individual physician or PSRO, however, will be identified.

The survey will focus on an indepth examination of those MCEs which have lead to the greatest improvement and those which have shown little or no improvement. Interviews will be conducted with members of the MCE study groups and relevent PSRO or hospital personnel to identify those factors that most contribute to or most inhibit effective correction through continuing education. The survey will analyze the importance of the following factors: delegation of review authority, PSRO linkage with existing continuing education programs, status of the MCE study members, status of the physician or physicians for whom continuing education is recommended, and degree of support from the hospital administrator.

Other MCE Recommendations

A similar survey of MCE recommendations will be conducted to enumerate other suggested corrective mechanisms, such as changes in a hospital's procedures for granting and maintaining privileges. (Table 10, Item 4) A random sample of such MCEs will be selected, and a member from each study group will be interviewed to ascertain any special circumstances which made the recommendations seem appropriate and to identify measures of impact. The analyses of the survey results will be primarily descriptive, however, a more indepth analysis may be conducted when there is evidence of a particularly effective system for corrections.

Sanctions

Title XI of the Act gives the Secretary two sanctions. As a result of a report from a PSRO that an individual provider has not fulfilled his obligations under the Social Security Act, the Secretary may prohibit that provider from participating on a reimbursement basis in the health benefit programs under the Act or may impose a fine equal in monetary value to the health services provided which were not medically necessary.

At the end of each fiscal year a report will be prepared documenting the incidence of such sanctions in terms of the numbers of providers or practitioners sanctioned, their distribution by region and PSRO area, the lengths of time of prohibited participation and the dollar volume of any fines imposed. (Table 10, Item 5a)

Every third year a special survey will be conducted to ascertain the impact of the sanctions. The survey will involve an examination of changes in performance of sanctioned providers or practitioners, including changes in concurrent review denial rates, and changes in the volume of Medicube practice, e.g., withdrawal from Medicube practice.

D. Research

The PSRO legislation has been interpreted as requiring review of all Medicube cases admitted to institutions. An amendment to the law, to reduce program costs by allowing sampling, might be recommended if it could be shown that sampling would not reduce program effectiveness. Research on this question could be conducted even in the absence of program amendments. For example, were it demonstrated that specific characteristics could be used to identify "high-risk" providers, one form of sampling would use these characteristics as a broad screening device to focus review activities. The regression analysis described under Impact of Concurrent Review Corrections would allow an examination of the impact of selected physician characteristics on performance with respect to concurrent review. These characteristics could include age, specialty, board certification status, education, practice setting, etc.

TABLE 10

EVALUATION MEASURES/DATA SPECIFICATIONS

Evaluation Measures	Data Elements	Specificity	Source	Recording Frequency
1. Frequency distribution of special review requirements	a. types of special review requirements available to PSROs b. incidence of use of special review requirements	PSRO	Special Study	Annual
2a. Denial rate = # denied utilizations ÷ # proposed utilizations	a. # AC denials b. # AC reviews c. # extension denials d. # extension requests	Physician PSRO	Special Study	Annual
2b. Change in denial rate = denial rate in period 2 - denial rate in period 1	denial rates	Physician PSRO	Special Study	Annual
2c. Estimated impact of additional corrective measures (regression coefficients)	a. denial rates b. special review requirement experience c. recommended continuing education experience d. PSRO membership status e. denial rate at 99th percentile f. PSRO denial rate g. change in PSRO denial rates h. PSRO cohort	Physician	Special Study	Annual
3a. Incidence of MCE studies which recommend continuing education	a. MCE Abstract b. MCE Restudy Abstract	PSRO	PMIS	Annual
3b. Measures of impact of continuing education	MCE findings	PSRO	Special Study	as necessary
4. Incidence of MCE recommendations of alternative corrective mechanisms	MCE Abstracts	PSRO	PMIS	Annual

	Evaluation Measures	Data Elements	Specificity	Source	Recording Frequency
5a.	Incidence of Section 1160(b) sanctions	a. number of sanctions b. value of fines c. duration of prohibitions on participation	PSRO region	Office of the Secretary	Annual
5b.	Impact of sanctions	a. revocations of sanctions b. change in denial rates	PSRO	Special Study	Triannual

Issue #9: ARE CRITERIA AND STANDARDS BEING DEVELOPED AND REVIEWED SYSTEMATICALLY AND ON A TIMELY BASIS AND ARE REVISIONS IMPLEMENTED?

A. Sub-Issues

1. What selection, control, and review processes are utilized to ensure the timely development of new and revision of established criteria and standards?

2. What factors are utilized to develop new and revise established criteria and standards?

Rationale:

Monitoring the appropriateness and quality of medical care against established criteria and standards for admission certification, continued stay review, and review of patient management with respect to diagnostic and therapeutic procedures, is a substantive part of the PSRO program. Since medical care is not a static process, the criteria and standards also have to be continuously monitored and reviewed to determine if they are still appropriate in light of changes in basic medical care knowledge (e.g., technology). This evaluation issue relates to the management of the process which develops and revises the criteria and standards that are subsequently used to monitor the quality of health care. Since there is a great number of recognized diagnoses and therapeutic procedures for which criteria and standards can be established, the selection, control, and review for developing new or revising existing criteria and standards requires a systematic management process.

B. Management/Policy Decisions

The analysis of this issue will provide essential information for the decisions to:

1. Establish priorities to develop and revise criteria and standards.

2. Provide technical assistance to assure that criteria and standards are being developed for the most appropriate diagnoses and problems.

C. Analysis

This issue analysis will be based on a qualitative assessment of the existing standards and criteria development, review, and revision processes in each operational and conditional PSRO. To describe these processes, the following data will be collected (Table 11, Item 1):

1. Who develops or reviews criteria and standards?

2. What factors were/are considered in determining those diagnoses and problems for which criteria and standards will be developed or revised, (e.g., 10 most frequent procedures)?

3. What mechanisms were/are used to develop or review criteria and standards, (e.g., MCEs, review of ongoing medical abstract data, selection of hospital committee)?

4. How often are the criteria and standards reviewed?

5. Were revisions implemented where indicated?

6. How long have the processes been in operation?

In assessing each PSRO, the following factors will be taken into consideration:

1. the existence or non-existence of a formal process,

2. the maturity of the PSRO,

3. the percent of Medicube program admissions covered by the developed criteria and standards (Table 11, Item 2),

4. the criteria and standards that have been developed and promulgated by the program,

5. the length of time the processes have been in operation, and

6. the diagnostic categories covered.

In addition, there are some indicators for detecting instances where changes in criteria and standards may be necessary, but have not been implemented. For example, there may be a significant difference between a norm and its related criteria and standards. This difference could result from a valid change in clinical practice which has not been reflected by changes in the criteria and standards. Such a

difference is only an indicator because there are other conditions that could bring about the deviation. To determine if these causes stem from the failure of timely modifications of criteria and standards, follow-up studies will be initiated where such differences are found.

It should be noted that a portion of the assessment of the proper development of criteria and standards will be covered under Formative Issue 8. Under that issue the amount of agreement between criteria and standards sets developed by the various PSROs will be measured. The index of agreement, if it is quite high, can also be construed to be a measure of proper and systematic criteria and standards development.

It is anticipated that the information required to conduct these analyses will be provided through the PSRO MIS. Since the analyses for this issue are not extensive, these assessments will be conducted for each PSRO annually.

TABLE 11

EVALUATION MEASURES/DATA SPECIFICATIONS

Evaluation Measures	Data Elements	Specificity	Source	Reporting Frequency
1. Assessment of development, review, and revision processes	. Source of development or review.	PSRO	PMIS	Annual
	. Priorities used to determine those diagnoses/procedures for which criteria and standards will be developed/ revised			
	. Mechanisms used to develop or review criteria and standards			
	. Frequency of criteria and standards review			
	. Length of time development and revision processes were in operation.			
	. Revisions implemented			
	. Criteria and standards developed			
	. Criteria and standards promulgated by program.			

Evaluation Measures	Data Elements	Specificity	Source	Reporting Frequency
2. Admission Coverage Admissions covered by developed criteria and standards ÷ total admissions	. Total admissions . Admissions covered by criteria and standards	PSRO	PMIS	Annual

Issue #13: HOW EFFECTIVELY AND EFFICIENTLY ARE THE VARIOUS PSROs ORGANIZED?

A. Sub-Issues

How effectively and efficiently are the various PSROs organized in terms of their:

1. relationships with other organizations (health care institutions, state councils, support centers, etc.),

2. staffing (number, job classifications, qualifications of personnel, etc.),

3. delegation of functions (e.g., review authority), and

4. review activity reimbursement mechanisms?

Rationale:

Specific organizational structures for local PSROs are not prescribed either by law or by regulation. The PSROs are thus allowed flexibility in developing and adjusting to local conditions. It is likely, however, that certain organizational elements will better facilitate the effective and efficient assumption of PSRO obligations and activities than others. Program managers at the national level will want to encourage the adoption, where appropriate, of those organizational elements which most contribute to the achievement of PSRO goals, and, conversely, discourage the adoption of those that are detrimental. Identification of such organizational factors is thus essential.

B. Management/Policy Decisions

The analysis of this issue will provide essential information for the decisions to:

1. Recommend to PSRO the adoption of certain organizational structures.

2. Provide additional technical assistance to PSROs for their administrative functions.

3. Develop policies regarding the appropriate training and other qualifications for PSRO personnel.

4. Recommend possible changes in policy with respect to the Secretary's overriding of the delegation of review authority.

5. Develop policies with respect to reimbursement of hospitals for expenses incurred in PSRO review activities.

6. Revise reasonable expenses formulae used for establishing budget levels in PSRO contracts.

C. Analysis

The analysis will be carried out as two separate special studies. The first study will be based on PSROs with at least one year's experience in the conditional phase. The second study will be identical to the first except that it will be based on PSROs which have had at least one year of operational status. The number of PSROs sampled for each study will be large enough to provide a representative sample, yet small enough to be manageable. The studies will involve comparisons between different PSRO organizational models as represented by a sample of PSROs classified according to the following characteristics (Table 12, Item 1):

1. stage of development (conditional, operational)

2. the number of Medicube admissions and hospitals

3. organizational arrangements with State Councils

4. organizational arrangements with support centers

5. staffing patterns, in terms of the type, number, and qualifications of personnel

6. delegation of review functions, in terms of the proportion of hospitals delegated concurrent review, the proportion of discharges from those hospitals, and/or the proportion of the budget for concurrent review incurred in hospitals delegated review

7. review activity reimbursement, in terms of the proportion of total PSRO costs reimbursed through direct payments to the PSRO (as opposed to direct payments to hospitals for that part of their reasonable expenses incurred through PSRO review activities).

The different PSRO organizational models will be identified through an examination of reports from the PSRO Management Information System (PMIS) and Contract Management System.

Those PSROs selected for the sample will be surveyed on site and examined in more detail to provide additional data for the organizational assessment. Comparisons will be made on the timeliness of the implementation of PSRO functions (and adherence to scheduled implementation), efficiency of the review processes established by the PSRO, and the costs of review. Most of the analyses will be in the form of narrative reports based on interviews with PSRO staff and informed sources in the local areas. The analyses for each study will focus on seven specific topics (Table 12, Items 2-4):

1. the impact of support centers on the development of PSROs

2. the relationship between the qualifications and organizational structure of the executive staff and the timeliness of implementation of PSRO functions

3. the impact on the effectiveness of the PSRO review component of employing personnel who have participated in Federally sponsored PSRO training programs

4. the effect of interactions between PSRO and local medical societies and institutions on the development of that PSRO and the effectiveness of its review program

5. the impact of delegations of review authority on the overall effectiveness of PSRO reviews (data from the health care review issue analyses will be used in this assessment)

6. the impact of alternative reimbursement policies on the incentive to delegate review authority and the incentive to request a delegation of review authority

7. the effect of different organizational structures on the PSRO budget in terms of total cost, cost per admission, and cost per review.

TABLE 12

EVALUATION MEASURES/DATA SPECIFICATIONS

Evaluation Measure	Data Elements	Specificity	Source	Recording Frequency
1. PSRO descriptors				
a. Staffing				
b. Delegation				
	Organization chart	PSRO	PMIS	Annual
	Number of hospitals delegated review	PSRO	PMIS	Annual
	Number of M^3 admissions in delegated hospitals	PSRO	PMIS	Annual
c. Financing				
	Number of M^3 admissions	PSRO	PMIS	Annual
	PSRO expenditures	PSRO	PMIS	Annual
d. Other organizational arrangements	Hospital reimbursements based on PSRO cost center	PSRO	PMIS (also BHI & MSA)	Annual
	Site visit reports	PSRO	on site survey	Special study
2. Timeliness of PSRO implementation	PSRO implementation plan	PSRO	PMIS	Annual
3. Effectiveness of review program	Site visit reports	PSRO	On site survey	Special study
	Results of analyses of other Health Care Review Issues	PSRO	PSRO evaluation studies	
4. PSRO cost				
a. Total cost	PSRO expenditures	PSRO	PMIS	Annual
b. Cost per M^3 admission	Number of M^3 admissions	PSRO	PMIS	Annual
c. Cost per review	Number of PSRO reviews	delegated and non-delegated hospitals		

SUMMATIVE ISSUES

Issue #1: ARE ALL MEDICUBE BENEFICIARIES COVERED BY ACTIVITIES OF PSROS?

A. Sub-issues

1. Have PSRO activities been implemented in all hospitals which participate in Medicube benefit programs and which are located in PSRO areas with conditional or operational PSROs?

2. Are all Medicube hospital episodes receiving PSRO review?

Rationale

The intent of the legislation is that all Medicube beneficiaries should be covered by the medical review activities of a PSRO. Thus, it is important that PSRO activities be implemented in all participating hospitals, and that in each hospital the health care services provided to all Medicube beneficiaries be subject to review. In addition, blanketing the country with organizations capable of assuring that health care services are medically necessary, meet professionally recognized standards, and are delivered in the most appropriate setting will provide the infrastructure for a national system of quality assurance essential to the implementation of a National Health Insurance program.

B. Management/Policy Decisions

The analysis of this issue will provide essential information for the decisions to:

1. Recommend changes in the manner in which PSRO activities are extended throughout the hospitals in a PSRO area.

2. Determine whether the legislative requirement has been met.

C. Analysis

The analysis will be conducted annually in all areas with conditional or operational PSROs. PMIS and PSRO Contract Reports will be used to identify which hospitals in each PSRO area have implemented PSRO activities either on a delegated or non-delegated basis. Two percentage measures of PSRO hospital coverage will be computed. The first will be the simple measure of the number of hospitals participating in Medicube with PSRO activities as a percentage of all Medicube participating hospitals. (Table 13, Item 1a) The second measure will use the annual number of Medicube discharges from each hospital as weights in a weighted percentage measure of coverage.

A complementary analysis will be performed annually using the collected Medicube PHDDS records for each PSRO area. PSRO coverage in each PSRO area will be computed as the ratio of the annual number of Medicube discharges with PSRO review to the annual number of all Medicube discharges. (Table 13, Item 2) PSRO coverage in the nation will be computed as the ratio of the annual number of Medicube discharges with PSRO review summed over all active PSRO areas (by classification of PSRO) to the annual number of Medicube discharges summed over all PSRO areas in the country. (Table 13, Item 3)

TABLE 13

EVALUATION MEASURES/DATA SPECIFICATIONS

Evaluation Measures	Data Elements	Specificity	Source	Recording Frequency
1. a. PSRO Hospital Coverage = #hospitals with PSRO activities ÷# hospitals	# hospitals with PSRO activities # hospitals in PSRO area	PSRO area	PMIS	Annual
b. PSRO Hospital coverage = # Medicube discharges from hospitals with PSRO activities ÷ # Medicube discharges in PSRO area	#M3 discharges from hospitals with PSRO activities #M3 discharges	PSRO area	PMIS BQA contract reports	Annual
2. PSRO area beneficiary coverage= # Medicube discharges with PSRO review ÷ # Medicube discharges	# M3 PHDDS records with PSRO review # M3 PHDDS records	PSRO area	PHDDS records	Annual
3. National PSRO coverage with PSRO review = # Medicube discharges with PSRO review ÷ # Medicube discharges	# M3 UHDA records with PSRO review # M3 UHDA records	Conditional PSROs Operational PSROs	UHDA records	Annual

Issue #2: ARE THE HEALTH CARE REVIEW ACTIVITIES (AC, CSR, CQA, MCE, AND PROFILING) AS CARRIED OUT IN THE PSRO PROGRAM, ASSURING THE QUALITY AND APPROPRIATENESS OF THE UTILIZATION OF HEALTH SERVICES?

A. Sub-issues

None

B. Management/Policy Decision

The analysis of this issue will provide essential information for recommending legislative or administrative changes.

C. Analysis

The opening section of Title IX.B. of the Social Security Act contains these words, ". . . it is the purpose of this part to assure, through the application of suitable procedures of professional standards review, that the services for which payment may be made under the Social Security Act will conform to appropriate professional standards for the provision of health care and that payment for such services will be made only when, and to the extent, medically necessary . . ." Although this issue cuts across many of the other evaluation issues there can be no doubt that the procedures of professional standards review must be evaluated with respect to these goals.

The analysis of this issue will consist primarily of a synthesis of the results of other evaluation issues and other evidence available from the program and its components. The procedures of professional standards review are addressed in Formative Issues 1, 2, and 3. The national program structure is addressed in Interim Issue 1, and the program coverage of the Medicube populations is addressed in Summative Issue 1. The synthesis will be in large part judgmental in an effort to meld both quantitative and descriptive analyses into an adequate representation of the impact of the program as a whole. The synthesis will also cover evidence generated external to the national program evaluation. This would include independent research conducted by local PSROs and other research which demonstrated PSRO impact such as might be conducted under the auspices of the National Center for Health Statistics, the National Center for Health Services Research, or other non-Federal health research groups.

This approach necessitates a continuing evaluation of this issue. Annual summaries will be prepared for inclusion in the annual PSRO report. These summaries will be able to cover only the descriptive analyses in the first years of the program, but will include some more quantitative analyses with the report for fiscal year 1977.

Issue #3: WHAT HAS BEEN THE IMPACT OF PSRO ACTIVITIES ON PHYSICIAN BEHAVIOR?

A. Sub-Issues

1. How have physicians' patterns of practice changed as measured by deviations from criteria and standards?

2. Has physician participation in the Medicube program changed significantly?

3. What impact have organizational and environmental factors had on changes in physician behavior?

Rationale:

The PSRO program can affect the behavior of physicians primarily in two ways: (1) alter physicians' practices with respect to utilization and quality of services, and (2) alter practitioners' participation in the Medicube programs.

Formative issues 1, 2, 3, and 4 contain methodologies for measuring the impact of admission certification, continued stay review, concurrent quality assessment, retrospective review and corrective mechanisms on the practice of medical care. Since each of these activities can have an impact on physician behavior, it is necessary to pull each of these issues together to assess the degree to which change of behavior has occurred.

With respect to the second change, it has been alleged that the program will either result in encumbrances to physicians' practices or be perceived as presenting such encumbrances. These allegations lead to an expectation that some changes in physician behavior would be reflected in their Medicube program participation. Thus, the analyis of this issue should also be directed at demonstrating that the anticipated dropouts are not occurring.

Behavioral change is a complex phenomenon, however, and there is no reason to believe that physician behavior will necessarily change uniformly across the program. Also when physician behavior does not change uniformly across the program, it may be due to other than PSRO program effects. For example, States have the option of modifying benefits in their Medicaid program. The exercise of these options can also have the effect of modifying physician behavior . Therefore to gain an understanding of where physician behavior has changed and

and where it has not, and whether that change is due to PSRO program effects, it is necessary to relate that behavior to those organizational and/or environmental factors that might have fostered the change.

The factors that can be anticipated to influence such change are: (a) payment setting (fee for service vs prepaid group practice); (b) independence of review (delegated vs non-delegated institutions; (c) sufficiency of medical personnel (as measured by physician/population ratios); (d) staff privilege patterns; (e) number of hospitals in PSRO areas; and (f) geopolitical characteristics of PSRO area.

B. Management/Policy Decisions

The analysis of this issue will provide essential information for the decisions to:

1. Recommend administrative and/or legislative changes in the program,

2. Provide additional technical assistance to PSROs.

C. Analysis

1. Description of analyses

Changes in Practice Patterns

This analysis will consist primarily of a judgmental synthesis of the results of portions of other evaluation issues and other evidence available from sources external to the program (Table 14, Item 1). Formative Issue 1 will have given some measurement of admission and extension denials. Formative issue 2 will have provided some indication of the degree to which physician behavior will have improved with respect to patient outcome and deviations from criteria and standards. Similarly, Formative Issue 3 will have resulted in a series of various improvements as a result of changes brought about by suggestions resulting from MCE studies, while Formative Issue 4 will have provided measures of improvements in physician performance resulting from corrective mechanisms. The analysis of this issue would also include independent research conducted by local PSROs and research carried out by other federal health research groups, such as the Bureau of Health Services Research and the National Center for Health Statistics.

Program Participation

This analysis will be performed annually on a national and regional basis using intermediary and carrier records as the data source. Baseline data will be collected for the year 1975.

There are two ways in which program participation may be affected by PSROs. One would be reflected in a change in total number of participating practitioners and the other would be indicated by a change in the degree of their participation.

To measure the change in the degree of participation a distribution of the Medicube admissions per physician will be computed for the baseline year and each succeeding year. (Table 14, Item 2) Variation between years will be examined for significance.

The number of physicians who have either terminated or initiated Medicube program participation will be computed each year to measure the net change in the number of participants. This analysis will take into account the national estimates of the change in number of practicing physicians that usually occur due to physicians either leaving or starting their practices. Where changes are traceable to specific states and to the Medicaid population they will be checked against changes in those states' benefits. (Table 14, Item 3).

Organizational and Environmental Factors

During the course of the analysis of Formative Issue 4, a four percent sample will have been drawn to examine changes in concurrent review denial rates. At the time of that data collection, supplemental information will be collected on every fourth physician in the sample. No individual identifications will be collected, however, and all information collected will remain confidential.

The supplemental information will be:

1. participation in prepaid group practice - a dummy variable set equal to one if fifty percent or more of the physicians Medicube practice is prepaid;

2. practice in delegated hospitals - a variable equal to the percentage of the physician's Medicube inpatient discharges that were treated in delegated hospitals; and

3. the PSRO area physician/population ratio, and

4. the number of hospitals in the PSRO area.

In order to test the impact of these factors on physician performance (in terms of concurrent review denial rates) these observations will be included in a weighted least squares regression analysis of changes in denial rates. (The weights to be used will be based on the physician's annual Medicube caseload.) The dependent variables, in

two separate regression equations, will be the change in the admission certification denial rate and the change in the extension request denial rate, respectively. The supplemental information on organizational and environmental factors will provide the independent variables. (Table 14, Item 4) The dummy variables for PSRO-SMSA status and single state PSROs and the delegated hospital practice variable will be included as qualifying variables. "Literature" variables include the prepaid practice dummy variable, the number of hospitals for which the physician has admitting privileges, and the physician/population ratio.

B. Comment

Medicube programs are known to have claims based on forgeries, duplicate billings, overcharges and fraudulent services. It is believed that one of the reasons that these practices exist is that the submitting individual practitioner is often the sole source of justification for a claim. The PSRO program may have a profound impact on these practices. Although such beneficial changes would be side-effects and not part of the main thrust of the program, they should not go unnoticed.

There are no direct measures of this beneficial side-effect. Therefore, an evaluation of this impact, if undertaken, would have to be achieved by means of an indirect method. For example, some States have been keeping records of those Medicaid claims that are identified as resulting from some of these practices. Changes in rates with which these practices are identified could possibly serve as a dependent variable for measuring the effect of the PSRO program on such practices.

TABLE 14

EVALUATION MEASURES/DATA SPECIFICATIONS

Evaluation Measures	Data Elements	Specificity	Source	Recording Frequency
1. Judgments of the degree of impact of PSROs on physician behavior	1. Results of previous issue analyses: a. admission denials b. extension denials c. patient outcomes d. deviations from criteria and standards e. MCE studies f. corrective mechanisms 2. Changes in program participation 3. Relationships to organizational and environmental factors.	See tables 6, 7, 8, and 9	PMIS and Special Studies	Quarterly Semi-annually and Annually
2. Variation in the distribution of admissions per physician = $D_B - D_A$	1. # Medicube admissions for base period (D_A) 2. # Medicube admissions during evaluation period (D_B)	Medicube program Physician	Intermediary & carrier records	Annually
3. Relative change in total participation = $\frac{\frac{T_A - T_B}{T_A}}{\frac{P_A - P_B}{P_A}}$	1. Total medicube practitioners during base period (T_A) 2. Total medicube practitioners during evaluation period (T_B) 3. Total practicing physicians during base period (P_A) 4. Total practicing physicians during evaluation period (P_B)	Physician		Same

Evaluation Measures	Data Elements	Specificity	Source	Recording Frequency
4. Impact of organizational and environmental factors (regression coefficients)	1. prepaid practice 2. delegated hospital practice 3. number of hospitals with which physician has admitting privileges 4. single state PSRO 5. PSRO area status with respect to Standard Metropolitan Statistical Areas 6. physician/population ratio 7. # of hospitals	a. physician b. PSRO	Special Study	Annually

Issue #4: WHAT HAS BEEN THE IMPACT OF PSRO ACTIVITIES ON INSTITUTIONAL BEHAVIOR?

A. Sub-issues

1. Have the organizational structures (e.g., committees) or operating procedures (e.g., medical records abstracting) of institutions changed as a result of PSRO activities?

2. Have there been changes in the physical structures or lay-outs of institutions as a result of PSRO activities?

3. Has there been a significant change in participation by institutions in the Medicube programs?

4. Do hospital occupancy rates indicate that changes in Medicube utilization induced by PSRO review have been off-set by changes in utilization by non-Medicube populations?

Rationale:

PSRO review of the quality and appropriateness of Medicube utilization in institutions is likely to have an effect on the organization and structure of those institutions. Measurement of the overall impact of PSRO will have to include these effects. In addition, within the institutions there may be significant spillover effects with respect to the non-Medicube patients. Indications of these effects should be evident in the composition of the patient populations served by the institutions.

B. Management/Policy Decisions

The analysis of this issue will provide essential information for the decisions to:

1. Recommend changes in program regulations or in the legislation.

2. Provide additional technical assistance to PSROs.

C. Analysis

Changes in Organization and Structure

At the completion of calendar year 1976 a special study will be conducted consisting primarily of case studies of a sample of institutions. The sample will be stratified by hospital size, population density of the surrounding community, medical school affiliation, and delegated review authority. The institutions will be selected from PSRO areas which have had a conditional PSRO for at least eighteen months.

Questionaires, interviews, and on-site observations from sampled institutions will be used to obtain the required information for assessing the PSRO impact in terms of changes in the organization or physical structure. The information will be acquired for pre- and post- PSRO periods. The pre-PSRO period data will be obtained immediately (before the end of calendar year 75). This information will be primarily a description of the organizational structure prior to PSRO. After 18 months, site visits and/or survey will be conducted to obtain a description of the current (end calendar year 1976) organizational structure, thereby identifying organizational changes brought about by the direct or indirect influence of PSRO activities. MCEs will be the major source for obtaining information regarding physicial structure changes.

The examination of changes in organizational structure will focus on policies, functions, and activities for:

- Admissions
- Utilization Review vis-a-vis Concurrent Review
- Medical Records
- Accounting
- Hospital Committees
- Clinical hospital departments
- Medical discipline

(Table 15, Item 1)

Impact of PSRO activities on physical changes of institutions will be assessed with regard to:

- Physical layout (e.g., location and size/space of nursing stations, or clinical departments)
- Changes in laboratory and technological equipment
- Changes in size of facility (e.g., increased number of beds, square footage)

(Table 15, Item 2)

Changes in patient populations served

A special study will be conducted annually to determine the extent to which institutions in PSRO areas are significantly increasing or decreasing their participation in the Medicube program. The study will include all PSROs which have been in conditional or operational status for at least one year. The source of data in active PSRO areas will be PHDDS. A small, matched sample of PSRO areas without PSROs will be used for comparison. The intermediaries and carriers will be the source of information for the number of Medicube admissions in the non-active PSRO areas.

The annual numbers of Medicare and Medicaid admissions for each hospital in the PSRO areas under study will be tabulated for each of the two most recent fiscal years. (Table 15, Item 3) All hospitals which exhibit a change in either Medicare or Medicaid admissions in excess of ten percent will be identified for further analysis.

This analysis will be primarily descriptive. Those hospitals identified as having a significant change in Medicare or Medicaid admissions will be examined in terms of the following factors: a) size, b) changes in size, c) changes in the availability of alternate institutions, d) requests for delegated review authority, e) changes in benefit packages or eligibility requirements in their state, and f) any specific institutional responses to PSRO review. The PSRO areas with conditional PSROs will be compared to the areas without PSROs in terms of the incidence and importance of these factors in order to distinguish PSRO induced effects from otherwise autonomous trends.

Spillover effects on occupancy rates

One possible response to decreases in Medicube utilization may be observed increases in non-Medicube utilization. A special study will be conducted to determine the extent to which this phenomenon occurs, controlling for other factors which are also likely to have an impact on non-Medicube utilization. All active PSRO areas will be included in the study.

The change in non-Medicube days of care in a PSRO will be used as the dependent variable in a regression analysis. The percentage of Medicube patients treated in delegated hospitals will be included as a policy variable, and the change in Medicube days of care will be included as a qualifying variable. "Literature" variables to be included in the analysis are the area-wide occupancy rate and the change in the area's total population.

TABLE 15

EVALUATION MEASURES/DATA SPECIFICATIONS

Evaluation Measures	Data Elements	Specificity	Source	Recording Frequency
1. Changes in Organizational Structure	Description of: . Organizational Chart . Admissions - functions, e.g., screening - number of people - policy . Utilization Review Concurrent Review - is it a committee or organizational unit - who do they report to in the hospital hierarchy - number and level of staff - what patients are reviewed and on what basis, e.g., sampling - what points in hospital stay are reviewed - what are the specific functions of the unit or committee . Medical Records - what patient abstract systems are used - number of people working on collecting patient abstract data . Accounting - are they involved with patient abstract data - are claims and patient abstract functions combined	Institution	Special Study	

Evaluation Measures	Data Elements	Specificity	Source	Recording Frequency
	. Hospital Committee what institutional committees are involved in monitoring or assessing the appropriateness of medical care and services what are their functions and staff composition . Medical discipline Number of Actions for the following: Practitioner brought before appropriate institutional committee Formal institutional committee reprimand Practitioner no longer able to practice in institution Practitioner brought before medical society Other			
2. Physical Changes in Institution a) Physical Layout b) Lab/Technological c) Facility Size	Location and Size/Space for Departments, Committees, Nursing Stations, etc. Listing of Lab/Technological Equipment Number of beds Square footage	Institution	Special Study	
3. Change in annual number of M^3 admissions	# M^3 admissions	a. PSRO area b. hospital c. M^3 program	PMIS and intermediaries and carriers	Annual

Evaluation Measures	Data Elements	Specificity	Source	Recording Frequency
4. Impact of selected factors on change in non-Medicube days of care (regression coefficients)	a. Change in Medicube days of care b. Change in non-Medicube days of care c. Occupancy rate d. Change in PSRO area population e. percentage of Medicube patients treated in delegated hospitals	PSRO area hospital	a. Special Study, PSRO MIS, and contract reports	Annual

Issue #5: WHAT HAS BEEN THE EFFECT OF PSRO ACTIVITIES ON HEALTH CARE EXPENDITURES IN THE UNITED STATES?

A. Sub-issues

1. What have been the changes in health care expenditures in the United States with respect to:

   a. total health care expenditures,
   b. total Medicube expenditures,
   c. PSRO program expenditures?

2. What has been the effect of PSRO activities on per capita Medicube expenditures?

3. What has been the change in hospital expenditures on utilization review (UR) and other quality assurance activities due to the introduction of PSROs?

Rationale:

Part of the impetus for the passage of the PSRO legislation was concern over the increase in expenditures for Medicare and Medicaid. It was believed that the activities of the PSROs would tend to moderate any future increases. Changes in Medicube expenditures are therefore a significant dimension of PSRO impact. Along that same dimension it will be important to measure spillover effects on total health care expenditures where such measurement is possible.

In addition, while the total cost of PSROs is an important measure of the overall effort devoted to that program, it is important to note that the program will replace current federally mandated efforts in UR and quality assurance. A measure of the additional effort incurred through the introduction of PSROs will be the difference between PSRO program costs and the current expenditures for UR and quality assurance.

B. Management/Policy Decisions

The analyses of this issue will provide essential information for the decisions to recommend amendments to the PSRO legislation.

C. Analysis

1. Description of the analyses

Changes in Health Care Expenditures

At the end of each calender year a report will be prepared detailing the level of health care expenditures in the United States. The report will include both sources and distribution of funds, and will document total Medicube expenditures by Program and the total PSRO budget as well as changes in those expenditure levels from year to year. (Table 16, Item 1) Sources of data will be primarily the Office of Research and Statistics within SSA, the Medical Services Administration in SRS, and BQA.

Changes in Per Capita Medicube Expenditures

A study involving a matched sample of PSRO areas will be conducted biannually to assess the impact of PSRO activities on changes in Medicube expenditures. Areas will be selected on the basis of region, population density, Medicube volume, and whether they are in single or multiple PSRO states. The areas will be chosen so that half of the sample will have conditional or operational PSROs and half will have a planning PSRO or no PSRO. In addition, the PSRO areas with conditional or operational PSROs will be chosen to assure representativeness of those organizations with respect to their dates of entry into the national program. This choice will enable an examination of any changes over time in the impact of PSROs on health expenditures.

The study will include analyses of changes in Medicare expenditures for a set of selected diagnoses in addition to an analysis of changes in expenditures for all diagnoses. Those diagnoses chosen will be of relatively high frequency and vary as much as possible in terms of per episode expenditures. As in Formative Issue #1, the lack of adequate national data on individuals' non-hospital health services utilization dictates primary focus on inpatient care. As a result, the diagnoses chosen for these analyses will be those for which care is provided primarily in hospitals with little possibility for inpatient substitution. Special studies on spillover impacts on ambulatory or extended care expenditures, however, may be conducted where there is adequate local data (such as may be available through the Medicaid Management Information Systems).

In each area the following statistics will be collected:

For Medicaid - total inpatient hospital expenditures
number of inpatient hospital discharges

For Medicare - total charges (Part A)
total intensive care charges
total operating room charges
total pharmacy charges
total laboratory charges

total radiology charges
total supply charges
total anesthesia charges
total inhalation therapy charges
total blood charges
total inpatient hospital discharges
total charges, Parts A and B
total eligibles

For Medicare, per capita hospital expenditures will be estimated by dividing total charges for Part A by the number of eligibles. A measure of PSRO impact on expenditures will be estimated as the difference between areas with PSROs and those without PSROs in terms of the percentage changes over time in per capita hospital expenditures.

A similar analysis will be conducted using data from the Medicare and Medicaid programs. Per episode expenditures will be estimated by dividing total hospital expenditures by the number of hospital discharges. A second impact measure will be the difference in percentage changes over time in per episode expenditures. In addition, the disaggregated Medicare data by revenue center (intensive care, pharmacy, radiology, etc.) will be used to identify any particular sources of observed differences in changes in per episode expenditures over time.

Finally, the disaggregated Medicare hospital data will be supplemented by Part B information on those beneficiaries who have been recorded with one or more of the selected diagnoses. These data will be analyzed to estimate both per episode and per eligible expenditures for each of the diagnoses. The methodology from the aforementioned analyses will be replicated to identify differences and sources of differences in percentage changes in per eligible expenditures. (Table 16, Item 2)

Changes in Expenditures for Utilization Review

A study will be conducted to ascertain pre-PSRO expenditures for utilization review. The study will be conducted in two phases. The first will focus on an estimation of UR expenditures prior to February 1975; the second will focus on UR expenditures in compliance with the Medicare and Medicaid UR modifications announced in November 1974.

Each study's estimates will be based on a sample of approximately forty short-term non-federal hospitals chosen to assure representativeness by region, ownership, hospital size, and medical school affiliation. Each hospital in the samples will be surveyed to ascertain annual UR expenditures in terms of personnel costs and associated overhead expenses (including paperwork generated to document the UR function).

The first phase of the study will be based on hospital records (or reconstructed records) of UR expenditures in calendar 1974. The second phase will be based on hospital records for the period of calender 1975, and the hospitals surveyed shall be restricted to those areas in which there has not been designated a conditional PSRO.

Both phases will include specific consideration of the relation between UR costs and coverage under UR of patient groups which are not Medicube beneficiaries. UR costs will be estimated as the annual expenditures for UR divided by the number of discharges subject to utilization review.

The impact of the UR modifications will be measured by the difference in the estimates of UR costs per admission from the two phases of the study. The impact of PSRO will be measured by the difference between the second phase estimate of per admission UR expense and the analogous average PSRO expense. (Table 16, Item 3)

2. Comments

a. States which initiate changes in the Medicaid benefit package will be excluded from the analysis of changes in Medicube expenditures unless each part of the sample has a PSRO representative from such a state.

b. Current Medicaid data collection procedures may require that the information needed for the analyses be obtained from State Medicaid Agencies rather than from SRS. Changes in these procedures, however, may enable disaggregated analyses to be performed which are now possible only for Medicare.

c. The analyses of changes in Medicube expenditures will not be able to distinguish modifications due to changes in patterns of practice from those due to changes in prices. It is for this reason that the analyses focus on percentage changes in expenditures rather than the actual expenditure levels themselves, and it is assumed that PSRO impact on medical care prices will be negligible. A study that would analyse the cost impact of PSRO-induced changes in patterns of practice is suggested in the research section.

D. Research

The existence of the PSRO system could enable a study that would examine changes in the cost of selected diagnoses. Such a study would be focused on the cost impacts of changes in patterns of practice and would provide a side benefit in a cost of care index that might supplement or replace the medical care component of the Consumer Price Index.

The study would be conducted using data from selected institutions in a sample of PSRO areas which have conditional or operational PSROs. The areas would be stratified with respect to region and population density; the institutions with respect to ownership, bed-size, teaching affiliation, and review delegation. Data collection for the study would cover a period of twenty-four months. The first twelve would constitute a baseline period, the latter twelve, a comparison period.

The study would be based on a subset of diagnoses and/or problems, with relatively high incidence and varying costs, for which criteria and standards had been developed in the study areas. Diseases treated entirely on an ambulatory basis would be excluded from consideration due to the sheer difficulty of collecting selected censuses of ambulatory encounters as well as the particular confidentiality problems that would arise in collecting such data on non-Medicube patients.

Ambulatory data would be used, however, to supplement hospital derived data. Such hospital data would be collected on all discharges from the study institutions which were reported with a principal diagnosis contained in the study set. This information would include (a) an itemized list of services provided during the hospital stay, (b) the charges for those services, (c) sources of payment, (d) indications of whether there were multiple diagnoses, and (e) whether the treatment was in compliance with the applicable criteria and standards. Ambulatory data would include both utilization and itemized charges.

Separate average costs of treatment would be computed for each of the diagnoses, for each of the time periods, for single vs. multiple diagnoses, and for Medicube and non-Medicube patients. A cost index would be computed as the ratio of the weighted sum of average costs of treatments in the second year to the weighted sum of what the average baseline treatments would have cost at the second year's prices. The weights to be used would be the incidences of the treatments in the second year.

PSRO impact on changes in costs should occur through reductions in the number of cases involving inappropriate utilization and reductions in the extent of inappropriate utilization. To measure this impact a second set of computations would be performed. For each of the time periods, in each of the diagnostic categories, and for each of the patient populations, two additional average cost statistics would be computed: the first for those cases in compliance with the criteria and standards, the second for those cases not in compliance. The weighted sum of the differences between the overall average cost of treatment in a category and the average cost for a compliant case in that category, as a proportion of the weighted sum of all average costs of treatment represents that fraction of average expenditures for health care incurred through utilization not in substantial compliance with criteria and standards. PSRO impact on expenditures would be measured by changes in that fraction for both the Medicube and non-Medicube populations.

TABLE 16

EVALUATION MEASURES/DATA SPECIFICATIONS

Evaluation Measures	Data Element	Specificity	Source	Recording Frequency
1. Health Care Expenditures a. total health care expenditures b. total Medicube expenditures c. total PSRO budget	a. total health care expenditures b. total Medicube expenditures c. total PSRO budget	Region M^3 Program	SRS BQA SSA	Annual
2. Change in per capita Medicube expenditures = 1/ $c = \frac{\left(\frac{E_{p1}}{M_{p1}} - \frac{E_{p2}}{M_{p2}}\right) \div \frac{E_{p1}}{M_{p1}} - \left(\frac{E_{n1}}{M_{n1}} - \frac{E_{n2}}{M_{n2}}\right) \div \frac{E_{n1}}{M_{n1}}}{\left(\frac{1}{k-1} \sum_{j=1}^{k} \left(\frac{E_{p1j}}{M_{p1j}} - \frac{E_{p2j}}{M_{p2j}}\right)^2 + \left(\frac{E_{n1j}}{M_{n1j}} - \frac{E_{n2j}}{M_{n2j}}\right)^2\right)^{1/2}}$	E_{p1} = total expenditures in year 1 in PSRO areas with conditionals - operationals M_{p1} = total discharges in year 1 in PSRO areas with conditionals - operationals E_{p1j} = total expenditures in year 1 in the jth PSRO area with an operational or conditional PSRO K = number of PSRO areas in each half of the sample E_{n2} = total expenditures in year 2 in PSRO areas without conditionals similar for M_{n1}, N_{n1j} etc.	Medicaid in-patient hospital Medicare Part B: Medicare Part A: intensive care operating room pharmacy laboratory radiology supply anesthesia inhalation therapy blood	SSA SRS	Biannual
3. Utilization review expenditures estimates	number of personnel involved, their qualifications and salaries, number of hours worked	Pre-1975 1975 and beyond	Special Study	Annual

1/ The evaluation measure c represents the "normalized" difference in proportional changes in per capita Medicube expenditures. The normalization factor (the denominator in Item 2) is an approximation of the standard deviation of the estimator.

SECONDARY EFFECTS ISSUE

Issue #6: WHAT HAS BEEN THE IMPACT OF PSRO ACTIVITIES ON HEALTH STATUS?

A. Sub-issues

None

B. Management/Policy Decisions

The analysis of this issue will provide essential information for recommending legislative and/or administrative change.

C. Analysis

In order to provide a more comprehensive assessment of the impact of PSRO on the quality of care, it would be necessary to measure the changes in the health status of the population affected. However, there are a number of serious problems in using health status as a measure of the impact of the PSRO program. Some of these problems are:

(a) The current state-of-the-art of health status assessment is primitive, at best. Few health status measures have been validated sufficiently to be considered for use in evaluation.
(b) Health status is not independent of other non-medical factors, such as the lifestyle, education, socio-economic status, and environmental conditions of a population.
(c) Health status may be affected by other recently introduced health programs such as Health Maintenance Organizations, Emergency Medical Services and Health Systems Agencies.

Although this issue is very important, the completion of this analysis must await further development of health status measures. This activity would most appropriately be part of a research program.

Chapter V

Implementation

CHAPTER V

IMPLEMENTATION

The evaluation of the PSRO program will be implemented during the next five years according to the schedule outline in Table 17. Each A priority issue and its sub-issues have been included. Due in large part to the pattern of growth of the program, certain analyses cannot be initiated until a sufficient number of mature PSROs have conducted medical care review for at least one year. Table 17 also reflects the fact that many of the issues will be examined several times. With respect to those issues whose analyses cannot be completed for several years, a preliminary study will be conducted so that important evaluative information can be made available at an earlier date. Other issues will require periodic updates to facilitate their continuing analysis.

An estimate of the funds required to carry out the evaluation plan are presented in Table 18. This budget was based upon the following assumptions:

1. computer services will be obtained from the operating agency, thus, avoiding certain costs connected with separate contracting;

2. PHDDS would be available in a national computerized data base;

3. data collected by Medicare/Medicaid intermediaries and carriers would be available to the evaluation staff at little cost over existing arrangements;

4. a large part of the evaluation would be performed with an in-house staff of approximately 7-10 professionals. With a reduced number of staff the cost estimates could be increased by as much as $300,000 per year.

5. certain data not presently required by the PMIS Federal Reporting will be collected by PSROs, so that extensive special data collection would not be necessary. The PSROs would be reimbursed, but the cost would be less than if the data were obtained by an independent contractor.

6. FY 76 does not include the cost of collecting the required baseline data because a method for collecting the data (Appendix B) has not as yet been agreed upon.

In the event the projected funding levels are not available, it may be necessary to omit the implementation of some of the "A" priority issue analyses. It is difficult to advance a clear rationale as to the order in which the analyses should be eliminated, but there is clearly a minimum set of issues without which the NPSRC would not be able to provide to the Secretary and the Congress adequate information regarding the "effective accomplishment of the purposes and objectives" of the PSRO program. This minimum set consists of Formative issues 1, 3 and 4 and Summative issue 5 as these are the issues that most directly deal with the impact of the PSRO program on cost, quality and the utilization of services as well as the specific mechanisms mandated by the legislation for affecting those factors. The total cost estimated for implementing this minimal set is $1.5 million.

In developing the implementation plan it was assumed that the evaluation, except for those issues which are primarily of a monitoring nature, would be carried out by an organization separate from the agency implementing the program. Such an organization should have a strong analytical and evaluative capability and wide responsibilities in most aspects of health care, particular those relating to quality assurance. The reasons for this assumption are:

1. There is a tendency for the operating agency to focus on short range issues rather than on long term program effects.

2. The role of the operating agency is naturally one of program advocacy, thus, preventing complete objectivity.

3. Because of (2) above, there is a serious credibility problem with the results of an evaluation conducted by an operating agency.

Responsibility for carrying out those issues consisting primarily of monitoring various parts of the program should rest with the operating agency. The results of these analysis should then be made available to the principal evaluating organization. Table 19 contains the recommended issue analyses assignments.

TABLE 17

ANALYSES/STUDIES COMPLETION SCHEDULE

Issues/Sub Issues \ Calendar/Quarters	1976 1	1976 2	1976 3	1976 4	1977 1	1977 2	1977 3	1977 4	1978 1	1978 2	1978 3	1978 4	1979 1	1979 2	1979 3	1979 4
Interim 1: Program Status			X				X				X				X	
Formative 1: Concurrent Review																
Sub 1: Extent of AC											X					
2: Extent of CSR											X					
3: Concurrent Review Effectiveness						X								X		
4: Denial Extension									X							
5: Utilization Change on Medicube Expenditures						X								X		
6: Net Savings						X								X		
Formative 2: Concurrent Quality Assessment																
Sub 1: Extent of CQA[1]																
2: Deviation Reduction[2]																
3: Cost of CQA[1]																
Formative 3: Retrospective Review																
Sub 1: Problem Identification						X			X				X			
2: Methodological Soundness							X								X	
3: MCE Effectiveness						X			X				X			
4: MCE Model Effectiveness									X							
Formative 4: Corrective Mechanisms																
Sub 1: Use of Corrective Mech.										X						
2: Impact of Concurrent Review Denials										X						
3: Continuing Education										X						
4: MCE Recommendations										X						
5: Sanctions																X

(Continued)

TABLE 17

ANALYSES/STUDIES COMPLETION SCHEDULE

Issues/Sub Issues		1976				1977				1978				1979			
Calendar/Quarters		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Formative 9:	Development and Review of Criteria/Standards																
Sub 1:	Systems Used					X				X				X			
2:	Factors Impact					X				X				X			
Formative 13:	Impact of Organization							X									X
Summative 1:	Program Coverage																
Sub 1:	All hospitals					X				X				X			
2:	All Medicube Admissions					X				X				X			
Summative 2:	Health Care Review Assuring Quality & Appropriateness of Services										X				X		
Summative 3:	PSRO Impact on Physician Behavior																
Sub 1:	Practice Patterns											X					
2:	Program Participation		X				X				X				X		
3:	Identification of factors							X									
Summative 4:	PSRO Impact on Institutional Behavior																
Sub 1:	Organization Structure	X						X									
2:	Physical Structure							X									
3:	Shift in population served		X				X				X				X		
4:	Occupancy rate Change											X					

TABLE 17 (Continued)

ANALYSES/STUDIES COMPLETION SCHEDULE

Issues/Sub Issues \ Calendar/Quarters	1976 1	1976 2	1976 3	1976 4	1977 1	1977 2	1977 3	1977 4	1978 1	1978 2	1978 3	1978 4	1979 1	1979 2	1979 3	1979 4
Summative 5: PSRO Impact on Health Care Expenditures																
Sub 1: Change in Expenditures				X				X				X				X
2: Per Capita Change						X								X		
3: UR Costs [3]	X					X										
Baseline Data Collection			X													

Notes:

1. Schedule is dependent on Private Initiative PSRO Study.
2. Unknown at this time because the number of PSROs that will implement CQA is not known.
3. A second study is needed to verify estimates of new UR regulation costs.

TABLE 18

EVALUATION PLAN BUDGET

Fiscal Year

Fiscal Year	1976	1977	1978	1979
Contracting $[1]	300,000[2]	1,300,000	700,000	700,000
S&E $[1]	150,000	300,000	300,000	300,000
Total	450,000	1,600,000	1,000,000	1,000,000

[1]These are in 1975 dollars.

[2]Does not include cost of collecting required baseline data which may be substantial.

TABLE 19

Issue Analysis Assignment

Issue		Operating Agency	Non-Operating Agency
Interim 1:	Program Status	X	
Formative 1:	Concurrent Review		
Sub 1:	Extent of AC		X
2:	Extent of CSR		X
2:	Extended Stays		X
3:	Effectiveness		X
4:	Denial Extension		X
5:	Utilization Change on Medicube Expenditures		X
6:	Net Savings		X
Formative 2:	Concurrent Quality Assessment		
Sub 1:	Extent of CQA		X
2:	Deviation Reduction		X
3:	Cost of CQA		X
Formative 3:	Retrospective Review		
Sub 1:	Problem Identification	X	X
2:	Methodological adequacy		X
3:	MCE Effectiveness		X
4:	MCE Model Effectiveness		X
Formative 4:	Corrective Mechanisms		
Sub 1:	Use of Corrective Mech.	X	X

Issue		Operating Agency	Non-Operating Agency
2:	Impact of Concurrent Review Denials		X
3:	Continuing Education		X
4:	MCE Recommendations		X
5:	Sanctions		X
Formative 9:	Development and Review of Criteria/Standards		
Sub 1:	Systems Used	X	
2:	Factors Impact	X	
Formative 13:	Impact of Organization		X
Summative 1:	Program Coverage		
Sub 1:	All hospitals	X	X
2:	All Medicube Admissions	X	X
Summative 2:	Health Care Review Assuring Quality & Appropriateness of Services		X
Summative 3:	PSRO Impact on Physician Behavior		
Sub 1:	Practice Patterns		X
2:	Program Participation		X
3:	Identification of factors		X
Summative 4:	PSRO Impact on Institutional Behavior		
Sub 1:	Organization Structure		X

Issue		Operating Agency	Non-Operating Agency
2:	Physical Structure		X
3:	Shift in population served		X
4:	Occupancy rate Change		X
Summative 5:	PSRO Impact on Health Care Expenditures		
Sub 1:	Change in Expenditures		X
2:	Per Capita Change		X
3:	UR Costs		X

Appendix A

Defining Clinical Diagnoses and Procedures for Use in the Evaluation of the Professional Standards Review Organization Program

APPENDIX A

CLINICAL DIAGNOSES AND PROCEDURES FOR USE IN THE EVALUATION OF THE PROFESSIONAL STANDARDS REVIEW ORGANIZATION PROGRAM

I. Introduction

The National Professional Standards Review Council has developed eleven program goals which provide direction for the total program and the criteria against which the program can be evaluated. These goals (See Chapter II) were partitioned into four basic areas:

1. Goals related to quality of services
2. Goals related to resource allocation
3. Goals related to program implementation and acceptance
4. Goals related to professional education.

The PSRO Program evaluation plan has then specified several high priority issues which are detailed in Chapter III of this document. The collection and analysis of detailed clinical data is primarily required for those issues related to the first two areas, quality of service and resource allocation. These issues are:

1. Have admission certification and continued stay review (concurrent review) been effective methods of reducing medically unnecessary hospital utilization?
2. Is Concurrent Quality Assessment (CQA), as carried out in the PSRO program, an effective method of assuring the appropriate utilization of services (diagnostic and therapeutic procedures)?
3. Is retrospective health care review, as carried out in the PSRO program, an effective method of assessing the quality and appropriateness of the utilization of services?
4. How effective are the various corrective mechanisms applied to institutions or practitioners for correcting inappropriate utilization of services and/or improving the quality of care?
5. How appropriate is the variation among PSRO's in terms of standards and criteria for admission certification, continued stay review, and review of patient management with respect to diagnostic and therapeutic procedures?

6. Are the health care review activities (AC, CSR, CQA, MCE and profiling), as carried out in the PSRO program, assuring the quality and appropriateness of the utilization of health services?

7. What has been the impact of PSRO activities on physician behavior?

8. What has been the impact of PSRO activities on institutional behavior?

9. What has been the impact of PSRO activities on the health status of the Medicube and non-Medicube populations?

Because of the costs associated with collecting and analyzing clinical data for the evaluation, it is not practical or feasible to consider all possible diagnostic categories and/or procedures. Therefore, the purpose of this portion of the evaluation plan is to define a set of clinical diagnoses and procedures which will be particularly useful for measuring the quality, cost and utilization of health care services and for which data will be collected for a period prior to the implementation of PSROs (baseline) and on a regular and/or special study basis.

The remainder of the paper is divided into four sections. The first contains a review of previous methods for selecting clinical conditions in quality of care studies. The second defines selection criteria and describes the selection process. The third contains the recommended diagnoses and procedures. Finally a discussion of the technical problems and currently available data sources is contained in Tab A.

III. Previous Methods for Selecting Clinical Conditions in Quality of Care Studies

While there are no previous quality of care studies of a scope and magnitude equivalent to that which is required by the PSRO program, several methods for selecting clinical conditions have been developed which have a high degree of applicability to the PSRO Program Evaluation.

Kessner (1) has developed detailed criteria which were utilized to define "tracer diseases" (see Tab B) in the measurement of quality of care. These criteria are as follows:

1. A tracer should have a definite functional impact (emphasis added). The over-riding purpose of the tracer approach is to focus on specific conditions that reflect the activities of health professionals. Conditions that are unlikely to be treated and those that cause negligible functional impairment are not useful.

2. A tracer should be relatively well defined and easy to diagnose. Dermatologic conditions have a clear functional impact. The difficulties, however, of defining clear-cut pathologic entities lessen their utility as tracers. In contrast, it is relatively easy to identify a population of patients with a hematocrit below a specified level and further to diagnose those with iron-deficiency anemia.

3. Prevalence rates should be high enough to permit the collection of adequate data from a limited population sample. If an adequate number of cases cannot be studied, it is difficult to evaluate even the most important variables in relation to the set of tracers.

4. The natural history of the condition should vary with utilization and effectiveness of medical care. Ideally, in evaluation of a delivery system, the conditions under study should be sensitive to the quality or quantity (or both) of the service received by the patient. It is inappropriate to use conditions for which health services do not alter the progress of the disease.

5. The techniques of medical management of the condition should be well defined for at least one of the following processes: prevention, diagnosis, treatment or rehabilitation. There is danger in using tracers to look at the process of care if minimal standards for medical management cannot be agreed upon.

6. The effects of nonmedical factors on the tracer should be understood. Social, cultural, economic, behavioral and environmental factors can influence the prevalence and distribution of many diseases. Thus, the epidemiology of the tracer should be relatively well understood and the population at risk easy to identify.

Payne in his study of hospital care in Hawaii evaluated the quality of of care rendered in 21 diagnostic categories which represented 32 percent of the total discharges from 22 acute general hospitals in Hawaii (Tab C). Selection of these conditions was based primarily on the following criteria:

1. The condition must have a relatively high incidence.

2. The disease or conditions should not be a self limiting one such that it is not responsive to therapeutic manipulation.

3. It should not be unduly dependent upon patient cooperation.

4. Some measures of preventive care or at least early detection should be demonstrated to affect the conditions.

5. The diagnoses selected should represent care delivered by as many medical and surgical specialties as possible.

Williamson has developed a sophisticated and intricate system for measuring the quality of care based on outcome assessment. Disease selection is based primarily on the estimation of expected impairment and the preventable impairment for each diagnostic category, that is, the attainable benefit not attained (ABNA). Expected impairment includes disability (weighted for length of hospital stay, complications and death), and social disruption (weighted for patient's age and frequency for which a disease occurs). Preventable impairment is estimated by physician judgment, using available literature, to determine the ability of good medical care to prevent impairment. In 1968 Williamson and his colleagues (2) implemented this system in a large midwestern, community hospital. By applying the disability weights (hospital days, complications and death) a list of ten priority diseases was developed for this hospital. These conditions and physician estimates of preventable impairment are found in Table 1 below. It should also be noted that Williamson found this list of priority conditions to vary from hospital to hospital depending upon the make up of the staff and the focus of that institution. Estimation of preventable impairment causes great difficulty in the prioritizing process as there exists virtually no medical literature for comparison (Williamson searched almost 11,000 articles in attempting to set standards for this study's estimation).

Additional criteria are used in eqidemiological studies. Among the more relevant are:

1. The disease condition must be validly diagnosed.

2. In mortality statistics, the cause of death must be reliably reported on the death certificate; in morbidity statistics the cause of hospitalization must be accurately separated from other concurrent conditions.

3. The onset of the disease and its health impact should be separated by as short duration as possible. (In certain

Table 1 - Estimating Preventable Impairment: Sample Results of Rank-Order Method*

Condition	Community Hospital			University		
	Internist	Surgeon	Pathologist	Internist	Surgeon	Pathologist
Pregnancy (uncomplicated delivery)	10	3	10	1	1	10
Acute coronary occlusion	5	10	7	7	5	8
Displaced intervertebral lumbar disk	4	5	4	8	10	4
Cerebral vascular accident	9	9	8	10	3	9
Fractured lower extremity	1	1	1	2	2	1
Cholelithiasis-cholecystitis	2	2	3	3	7	2
Diabetes mellitus	3	7	6	6	8	5
Pyelonephritis	6	6	5	5	7	6
Hemorrhoids	7	4	2	4	9	3
Emphysema	8	8	9	9	4	7

*Given no other qualifying information, each physician ranked the ten listed conditions in order of estimated preventable impairment (1 = most, 10 = least preventable impairment).

disease conditions, e.g., cancer, "incubation" periods from 15 to 20 years have been demonstrated. This time lag makes the assessment of the impact of medical care difficult to judge. Even for those conditions which have often been used in the assessment of morbidity or mortality, the time lag is considerable. A good example of this are the studies on the impact of treatment on hypertension in the prevention of cerebrovascular accidents (3) which required follow-up periods of approximately 3 years).

4. The denominator populations must be known to develop meaningful rates and ratios.

III. Diagnosis and Procedure Selection Process

The process of selecting the diagnoses and procedures for which utilization, quality, and cost data will be collected and analyzed in the evaluation of the PSRO program utilizes a series of three selection criteria. These were developed from a review of the literature and expert judgments. The initial three selection criteria are:

1. Frequency (high)

2. Health System Impact (high)

3. Cost of Care (high)

If a diagnosis (or procedure) has a high frequency, or a high cost or is highly responsive to the health care system (i.e., medical care has a positive impact on the course of the disease), the diagnosis or procedure is then characterized to determine whether it will be useful in the assessment of one or more of the following evaluation areas:

1. Quality of Care

2. Utilization of Resources

3. Cost of Care

To make these determinations, characteristics or attributes have been developed for each of the evaluation areas.

1. The total set of Diagnoses and Procedures useful in assessing quality should have the following characteristics (individual diagnoses need not have all characteristics):

a. High health system impact, i.e. the natural history of disease has been shown to vary with medical treatment,
b. A high level of agreement within the medical profession regarding the appropriate processes of care,
c. Clearly identifiable intermediate or long term outcomes,
d. Complications identifiable and due to the medical care process,
e. Amenable to data gathering via special studies,
f. Increased morbidity or mortality if services are underutilized, and
g. High frequency of occurrence.

2. The set of diagnoses and procedures useful in assessing utilization have the following characteristics (individual diagnoses need not have all characteristics):

a. High frequency of occurrence,
b. High cost of care,
c. Diagnosed with a high degree of reliability,
d. Amenable to data gathering via uniform hospital discharge data set,
e. Stable utilization pattern during recent time periods.

3. The set of diagnoses and procedures useful in assessing cost have the following characteristics:

a. Primarily inpatient and limited to the acute short term general hospital with little opportunity for substitution of other institutional or ambulatory care, and
b. Representative of different levels of cost and frequency of occurrence.

Finally the selected diagnoses should be representative of the various medical specialties.

IV. Summary and Recommendations

Application of the above criteria and disease characteristics and the technical data found in Tab A, yields the lists of diagnoses (Tables 2-4) for use in the evaluation of the PSRO Program.

TABLE 2

CONDITIONS FOR THE EVALUATION OF QUALITY

OF CARE IN THE PSRO PROGRAM EVALUATION

		ICDA-8
1.	Hypertension	400 - 404
2.	Pneumonia	480 - 486*
3.	Congestive Heart Failure - Pulmonary Edema	427.0, 427.1
4.	Urinary tract infection	590, 595
5.	Ulcer stomach, dudenal, peptic, gastrojejunal	531 - 534
6.	Cholecystitis/Cholelithiasis	574, 575
7.	Inguinal Hernia without obstruction	550
8.	Hyperplasia prostate	600
9.	Hysterectomy	69.1 - 69.7
10.	Intervertebral Disc, Displacement	725
11.	Complications & adverse reactions	960 - 979, 995 - 999

*Includes unspecified cases

TABLE 3

CONDITIONS FOR THE EVALUATION OF THE UTILIZATION

OF SERVICES IN THE PSRO PROGRAM EVALUATION

		ICDA-8
1.	Cerebrovascular Disease	430 - 438*
2.	Chronic Ischemic Heart Disease	412
3.	Acute Myocardial Infarction	410
4.	Diabetes Mellitus with and without acidosis	250
5.	Malignant Neoplasm breast	174
6.	End Stage Renal Disease	580, 582, 753.1, 759.8, 590.0, 590.1, 446.2, 752, 753
7.	Cholecystitis/Cholelithiasis	574, 575
8.	Inguinal Hernia without obstruction	550
9.	Delivery with and without complications	650 - 662
10.	Hypertrophy Tonsils and Adenoids	500
11.	Fracture Femur	820
12.	Displacement Intervertebral Disc	725
13.	Cataract	374
14.	Neuroses	300

*Includes unspecified cases

TABLE 4

CONDITIONS FOR THE EVALUATION OF THE

COST OF CARE IN THE PSRO PROGRAM EVALUATION

		ICDA-8
1.	Cerebrovascular Disease	430 - 438*
2.	Pneumonia	480 - 486*
3.	Acute Myocardial Infarction	410
4.	Diabetes mellitus with and without acidosis	250
5.	Appendicitis	540 - 542
6.	Cholecystitis/Cholelithiasis	574, 575
7.	Inguinal Hernia without obstruction	550
8.	Hyperplasia Prostate	600
9.	Hypertrophy Tonsil and Adenoids	500
10.	Fracture Femur	820
11.	Neuroses	300

*Includes unspecified cases

TAB A

Technical Considerations and Data Availability

This section discusses the technical considerations related to the use of the three major criteria-frequency, system impact, and cost. The limited data indicate a level of caution which must be maintained throughout the development of the program evaluation.

A. Criteria: Frequency of Diagnosis/Procedure

Frequency of a category is a consistent concern in the evaluation analyses. Three data sources are particularly useful for further investigating this concern. First, the National Center for Health Statistics published, from the National Health Survey, "Inpatient Utilization of Short-stay hospitals in the U.S. in 1971" (4). Tables 5 and 6 provide a summary of this discharge data both in the aggregate for all age groups and for the age group over 65 years.

A second source is Medicare data (5) currently available for discharges in 1969 and 1970. These data include the following parameters:

1. Number of Discharges
2. Average stay in days
3. Standard Deviation of Length of Stay for the 10th, 25th, 50th, 75th and 90th percentiles.

A third source of frequency data is the Medicaid program. No national Title 19 utilization data are available. However, data reflecting the rank order of conditions causing hospitalization in the states of Illinois, New Mexico and Massachusetts have been used to augment the list of diagnostic categories frequently encountered.

The utility of the "frequency" criteria in the evaluation of the PSRO program depends on three factors: (1) frequency of the condition; (2) number and validity of diagnostic categories; (3) size of PSRO area.

1. Frequency of the Condition

The twelve most frequent diagnostic conditions for the 65 years and older population are:

Table 5 - Number and annual rate of discharges and average length of stay for inpatients discharged from short-stay hospitals, excluding newborn infants, by selected first-listed diagnostic conditions and sex: United States, 1971*

Diagnostic condition and ICDA code	Number of discharges in thousands			Discharge rate per 10,000 population			Average Length of stay in days		
	Both sexes[1]	Male	Female	Both sexes[1]	Male	Female	Both sexes[1]	Male	Female
All conditions, all ages[2]	29,459	11,644	17,767	1,457.7	1,196.3	1,696.0	7.8	8.4	7.5
Diarrheal diseases 009	311	142	168	15.4	14.6	16.0	4.7	4.2	5.2
Neoplasms:									
Malignant neoplasms 140-209	1,196	535	658	59.2	55.0	62.8	14.1	14.4	13.9
Benign neoplasms 210-239	698	135	562	34.5	13.9	53.7	6.5	6.0	6.6
Diabetes mellitus 250	430	172	257	21.3	17.6	24.6	11.3	10.3	12.0
Ischemic heart disease 410-414	1,479	848	627	73.2	87.2	59.9	12.6	12.2	13.0
Acute myocardial infarction 410	336	224	112	16.6	23.0	10.7	16.4	15.9	17.5
Other ischemic heart disease 411-414	1,143	624	515	56.5	64.2	49.2	11.4	10.9	12.1
Cerebrovascular disease 430-438	530	243	285	26.2	25.0	27.2	14.2	13.4	14.9
Disease of the respiratory system:									
Acute respiratory infections except influenza 460-466	577	294	281	28.5	30.3	26.8	5.5	5.3	5.8
Pneumonia, all forms 480-486	642	342	299	31.7	35.1	28.6	9.1	8.9	9.3
Hypertrophy of tonsils and adenoids 500	979	447	529	48.4	46.0	50.5	2.1	2.1	2.1
Diseases of the digestive system:									
Ulcer of stomach, duodenum, peptic ulcer of unspecified site, and gastrojejunal ulcer 531-534	421	248	172	20.8	25.4	16.4	9.8	9.4	10.4
Inguinal hernia 550,552	471	419	51	23.3	43.0	4.8	6.5	6.4	7.3
Cholelithiasis, cholecystitis, and cholangitis 574,575	531	132	398	26.3	13.5	38.0	10.9	11.8	10.6
Disorders of menstruation 626	432	...	432	21.4	...	41.3	4.2	...	4.2
Obstetrical conditions 630-678	4,203	...	4,203	208.0	...	401.2	3.8	...	3.8
Injuries:									
Fractures, all sites 800-829	1,066	561	503	52.7	57.7	48.0	11.7	10.0	13.6
Laceration and open wound 870-907	373	269	103	18.5	27.7	9.8	5.3	5.1	5.7

[1]Includes data for sex not stated.
[2]Includes data for diagnostic conditions not shown in table.
*Above table adapted from Reference 4

Table 6 - Number and annual rate of discharges and average length of stay for inpatients aged 65 years and over discharged from short-stay hospitals, by selected first-listed diagnostic conditions and sex: United States, 1971*

Diagnostic condition and ICOA code	Number of discharges in thousands			Discharge rate per 10,000 population			Average length of stay in days		
	Both sexes[1]	Male	Female	Both sexes[1]	Male	Female	Both sexes[1]	Male	Female
All conditions, 65 years of age and over[2]	5,986	2,696	3,280	3,057.4	3,288.7	2,882.2	12.6	12.1	13.0
Malignant neoplasms - - - - - - - - 140-209	540	281	258	276.0	342.4	226.8	15.6	15.1	16.1
Diabetes mellitus - - - - - - - - - - 250	164	56	107	83.7	68.6	94.2	13.2	12.7	13.4
Cataract - - - - - - - - - - - - - - - 374	168	62	105	85.8	76.1	92.5	7.4	7.4	7.3
Ischemic heart disease - - - - - - - 410-414	814	400	412	415.6	488.5	362.3	13.4	12.9	13.9
Acute myocardial infarction - - - 410	162	93	68	82.7	113.8	60.2	16.4	15.2	18.0
Other ischemic heart disease - - - 411-414	652	307	344	333.0	374.7	302.1	12.7	12.1	13.1
Congestive heart failure - - - - - - 427.0	118	51	66	60.1	62.7	58.3	12.4	11.7	12.9
Cerebrovascular disease - - - - - - 430-438	377	163	213	192.6	198.9	187.4	14.9	13.9	15.6
Arteriosclerosis - - - - - - - - - - 440	96	42	54	49.3	51.0	47.6	13.7	12.4	14.8
Pneumonia, all forms - - - - - - - - 480-486	177	94	83	90.5	114.4	73.2	12.1	12.0	12.3
Diseases of the digestive system:									
Ulcer of stomach, duodenum, peptic ulcer of unspecified site, and gastrojejunal ulcer - - - - - - - 531-534	105	56	49	53.8	68.7	42.8	12.2	11.7	12.9
Cholelithiasis, cholecystitis, and cholangitis - - - - - - - - - - 574,575	150	54	95	76.4	65.8	83.9	13.9	14.2	13.8
Hyperplasia of prostate - - - - - - 600	132	132	...	67.2	160.4	...	13.2	13.2	...
Arthritis, all forms - - - - - - - - 710-718	133	37	96	68.1	45.6	84.1	13.1	11.8	13.6
Fractures, all sites - - - - - - - - 800-829	293	78	215	149.6	94.7	189.1	18.8	17.6	19.2

[1]Includes data for sex not stated.

[2]Includes data for diagnostic conditions now shown in table.

*Above table adapted from Reference 4

a. Chronic Arteriosclerotic Heart Disease
b. Cerebral Vascular Disease
c. Pneumonia
d. Fracture of the lower limb
e. Hernia without obstruction
f. Cataract
g. Diabetes mellitus
h. Acute myocardial infarction
i. Hypertension
j. Hyperplasia Prostate
k. Cholelithiasis
l. Ulcer; stomach, duodenum and jejunum

From other available (e.g., NCHS all ages) data, the following three conditions could be added:

a. Uncomplicated delivery
b. Hypertrophy of tonsils and adenoids
c. Menstrual disorders.

Frequent operations and procedures could also be considered. The National Center for Health Statistics has published, "Surgical Operations in Short-Stay Hospitals, United States - 1971" (6) which provides frequency data on the occurrence of major operations and major procedures. The ten most frequent are:

a. Tonsillectomy with or without adenoidectomy
b. Dilation and curettage of uterus, diagnostic
c. Biopsy
d. Hysterectomy
e. Repair of inguinal hernia
f. Excision of lesion of skin and subcutaneous tissue
g. Cholecystectomy
h. Oophorectomy; salpingo-oophorectomy
i. Appendectomy
j. Closed reduction of fracture without fixation

Several points are noted in considering these data: 1) minor procedures e.g., cystoscopy are subsumed under more major procedures, 2) categories are not precisely divided but rather represent the lumping of many specific procedures and 3) while the incidence of certain procedures is extraordinarily high on a national basis the incidence in some PSRO areas may not be very high.

The difficulties encountered in a precise division of the categories is illustrated by category 29.8, cardiac revascularization, which includes 15 different procedures. While 365,000 events are indicated for this category, it is impossible, at this time, to obtain specific

frequency data on the coronary by pass procedure; others (7) have estimated that 20,000 coronary by pass operations were performed in 1971 rather than the larger number suggested by these data.

2. Number and Validity of Diagnostic and Procedural Categories

While the previously mentioned frequent diagnoses and procedures appear to have a very high incidence, care must be taken to consider the number of different conditions within each ICDA grouping and the validity of these diagnoses. The ICDA three digit groupings for pneumonia, all forms (480-486) and cerebrovascular disease (430-438) serve as excellent examples of this concern.

Pneumonia is disaggregated into more than 19 other etiological conditions. The National Center for Health Statistics, Hospital Care Statistics Branch has further detailed the frequency of this condition. (See Table 7 below)

TABLE 7

Code and Diagnosis	Number 1971 Discharges (Thousands)	Percent of all Discharges (all ages)
480 - Viral pneumonia	32	<0.10
481 - Pneumoccoccal pneumonia	136	0.46
482 - Other Bacterial pneumonia	12	< 0.10
483 - Pneumonia due to other organisms	8	< 0.10
484 - Acute Interstial pneumonia	3	< 0.10
485 - Bronchopneumonia, unspecified	166	0.56
486 - Pneumonia, unspecified	284	0.96

Thus a condition which at first glance appears to be extremely useful as a measure of health care effectiveness, on further investigation shows 3 of 4 cases insufficiently diagnosed (as indicated by the discharge front sheet and at this time there is no indication the PSRO discharge data will be anymore detailed) to be of use in rigorous evaluation studies. Further study will be required to determine what proportion of the unspecified pneumonias actually had a specified etiology recorded in the chart (were false negatives) and what proportion of the specified pneumonias did not have a specified etiology recorded (were false positives).

The extent of these false positive and false negative diagnoses rather than preventing the use of particular diagnoses more appropriately requires careful use of PSRO data in answering specific questions. For instance, utilization and cost questions regarding "pneumonia" will provide useful and valid information when the general condition of "pneumonia" is correctly diagnosed. If the question, however, relates to the quality of care provided patients with "pneumococcal pneumonia," measurement and control of misclassification error must be achieved. Fleiss (8) has reviewed misclassification errors and suggests methods for: control of such errors, estimating the magnitude of such errors, and determining their statistical significance. In general these methods require independent reclassification of a sample by one or two individuals, and while such techniques are time consuming and expensive, they are an essential part of investigating specific evaluation questions. The reclassification process can also be an educational one as a review of the 75% of the pneumonias which are unspecified might lead to the use of additional diagnostic tests or deletion of inappropriate therapies.

Cerebrovascular disease suggests additional complexities. First, there are approximately 88 subclassifications of this condition. Table 8 below provides an analysis of disaggregate, NCHS, Hospital Discharge survey data:

TABLE 8

Code and Diagnosis	Number Discharges 1971 (Thousands)	Percent of all Discharges (all ages)
430 - Subarachnoid Hemorrhage	18	0.10
431 - Cerebral Hemorrhage	38	0.12
432 - Occlusion precerebral arteries	28	0.10
433 - Cerebral Thrombosis	81	0.27

TABLE 8 (cont.)

Code and Diagnosis	Number 1971 Discharges (Thousands)	Percent of all Discharges (all ages)
434 - Cerebral embolism	5	0.10
435 - Transient cerebral ischemia	26	0.10
436 - Acute but ill-defined cerebrovascular disease	200	0.68
437 - Generalized ischemic cerebrovascular disease	108	0.36
438 - Other and ill defined cerebrovascular disease	25	0.10

Sixty-three percent (333,000 of 529,000) of the cases are characterized as "ill-defined" or "generalized".

Second, in utilizing cerebrovascular disease it will be necessary to control comparative PSRO evaluations to account for variations in incidence and case-fatality rates. The Nationwide Cerebrovascular Disease Morbidity Study (9) documented:

a. A 2-3 fold difference in incidence between low incidence areas (Florida, Colorado and Kansas) and high incidence areas (Georgia, North Carolina and South Carolina);

b. A 28% case fatality percentage in Denver and a 49% case fatality percentage in South Carolina;

c. A difference in length of stay reflecting the higher case fatality rates in the southeast.

Thus before selecting any condition for the evaluation of the PSRO program an ajustment must be made for the validity of available diagnostic data and natural variations of incidence and mortality which might occur nationally. This again emphasizes the need for accurate baseline data.

3. Size of PSRO Area

The size of the PSRO area, as measured by number of expected Title 18 and 19 admissions, could significantly limit the number of diagnoses

and procedures that could be considered for use in the evaluation. For example, consider a PSRO area with 20,000 or less admissions per year. A high frequency diagnostic condition such as cholelithiasis (11th most frequent condition in the 65 and old age group) would account for less than 400 admissions annually in that PSRO area. There are more than 20 PSRO areas with 20,000 or less Medicare and Medicaid admissions per year.

While the actual number of cases necessary to discriminate between PSROs will depend on the questions asked, and the methods and statistical tests, some estimation can be obtained from previous studies.

Prospective studies are the most demanding in regard to sample size required and thus establish an upper limit for numbers required. If the incidence rate (not hospitalization rate) of a condition for the period of study is 1/100 and the risk between the PSRO area and non-PSRO area is 2, the number of cases required would be 1,000 to establish an 80% probability of detecting the difference with the significance level at 0.05. This describes the extreme lower limit of a sample size for a prospective study. The size required will often be much higher because the incidence is often not as high as 1/100 and anticipating a risk of 2 in non-PSRO vs PSRO areas is rather optimistic. Retrospective studies could require as few as 20-40 carefully documented cases, and the use of non-parametric statistics can define extreme statistics with even fewer cases. If an evaluation is to include all PSRO areas or use a stratified sample, consideration should be given to combining these small areas with adjacent areas, and thus provide for a larger number of admissions. This topic will merit major consideration as methodologies are decided upon.

B. Criteria: Health System Impact

The diagnostic categories contained in Table 9 represent those in which the health system could have a high positive impact on patient outcome as identified by Williamson, Kessner, the Kellogg Private Initiative Study of PSRO, and OPSR staff.

A review of this table indicates that the following conditions are recommended by more than one source:

1. Pneumonia,
2. Acute myocardial Infarction,
3. Delivery (complicated and uncomplicated),
4. Cholelithiasis,

Table 9 - Conditions on which the health care system has substantial positive impact.

Condition	Program Estimation	Williamson (Rockford)	Kessner	Kellogg PI in PSRO
1. Pneumonia	x			x
2. Acute Myocardial Infarction		x		x
3. Cataract	x			
4. Diabetes Mellitus		x		
5. Hernia without Obstruction	x			
6. Cerebral Vascular Disease		x		
7. Hyperplasia prostate	x			
8. Delivery, Complicated and uncomplicated	x	x		
9. Cholelithiasis	x	x		x
10. Fracture Lower Limb	x	x		x
11. Lacerations, trauma	x			
12. Acute Appendicitis	x			
13. Urinary Tract Infections		x		x
14. Complications and Adverse Reactions	x			
15. Hypertension	x		x	
16. Displaced intervertebral Lumbar Disc		x		
17. Hemorrhoids		x		
18. Emphysema		x		
19. Otitis Media with Hearing Loss			x	
20. Visual Disorders			x	
21. Iron Deficiency Anemia			x	
22. Cervical Cancer			x	
23. Diarrhea in children				x
24. Upper G.I. ulcer Disease				x

Note: Kessner was also considering outpatient conditions.

5. Fracture of the lower limb,

6. Urinary tract infections, and

7. Hypertension

Other conditions also merit special considerations. For example, end stage renal disease has become a prominent and increasing cause of admission to short term general hospitals subsequent to the passage of the 1972 Social Security amendments. The impact of this legislation on hospital utilization data is not yet available, but anecdotal information suggests that patients with chronic renal disease, and its complications could constitute the third most common cause of short term hospital admission (in hospitals with active chronic renal disease programs). This increase in utilization along with the concern for the improved quality of life make this an important PSRO quality of care concern.

Another category of special consideration is that of adverse drug effects. Jick, in "Drugs-Remarkably Nontoxic" (10) reports that the Boston Collaboratine Drug Surveillance Program has found 30 percent of medical inpatients have an adverse drug reaction with the most common reactions being nausea, drowsiness, diarrhea, vomiting and rash. Three percent of patients (n=19,000) had life threatening reactions and 46 deaths occurred or 2.4 per 1,000. Since each patient received an average of nine different drugs during the hospitalization, individual drugs were considered to be remarkably non-toxic and, in fact, 16 deaths were due to excessive administration of potassium chloride and 8 from excessive fluid administration.

C. Criteria: Cost of Care for Diagnostic Condition or Procedure

While cost data are copiously available for medical care payment programs such as Title 18, Title 19, Blue Cross etc., (See SSA-ORS publication 73-11903, "Compendium of National Health Expenditures Data") they are conspicuously absent for specific diagnostic categories. Medicare data for 1969 (11) provide "mean charge per Discharge", but these data reflect almost entirely mean charge per day times the length of stay taking into account only the presence or absence of surgery. They are useful however in providing the relative relationships of costs, one condition to the other. Table 10 provides a synopsis of these data.

These limited cost data suggest that for the 1969 Medicare population the most costly conditions are:

1. Fracture of the neck of femur, closed

2. Acute coronary occlusion

Table 10- Standardized Mean Charge, 1.00=1969 Average Cost of Hospitalization for a Medicare Beneficiary

Primary Discharge Diagnosis	ICDA 7th	Standardized Mean Charge per Discharge
Malignant neoplasm of breast	170	1.23
Malignant peoplasm of prostate	177	1.16
Malignant neoplasm, generalized	199	1.31
Diabetes mellitus	260	0.96
Cerebral hemorrhage, nontraumatic	331	1.10
Cerebral embolism and thrombosis	332	1.23
Other and ill-defined vascular lesions affecting central nervous system	334	0.88
Cataract	385	0.62
Arteriosclerotic heart disease so described	420.0	0.98
Acute coronary occlusion	420.1	1.44
Other heart disease specified as involving coronary arteries	420.3	0.96
Other myocardial degeneration, excluding fatty degeneration	422.1, 422.9	0.96
Other and unspecified diseases of heart	434	1.01
Other hypertensive heart disease	443	0.89
Other hypertensive disease	447	0.67
Arteriosclerosis not further specified	450.0	0.89
Bronchitis, acute and unqualified, and acute upper respiratory infection	475,500,501	0.63
Pneumonia	490-493	0.96
Chronic bronchitis and emphysema without mention of bronchitis	502,527.1	0.96
Ulcer of duodenum without perforation and without hemorrhage	541.0	0.84
Hernia of abdominal cavity without mention of obstruction	560	0.80
Intestinal obstruction without mention of hernia	570	1.17
Gastroenteritis and colitis	571	0.53
Diverticulitis	572.1	0.81
Cholelithiasis	584	1.26
Cholecystitis and cholangitis without mention of calculi	585	1.01
Pyelitis, pyelocystitis, and pyelonephritis	600.0	0.86
Hyperplasia of prostate	610	1.20
Fracture of neck of femur, closed	820.0	1.88
All other diagnoses	--	0.96

3. Malignant Neoplasm, with matasteses
4. Cholelithiasis
5. Malignant Neoplasm, breast
6. Cerebral Embolism and Thrombosis
7. Intestinal obstruction without hernia
8. Hyperplasia of prostate
9. Malignant neoplasm of prostate
10. Cholecystitis and cholangitis without calculi

"Relative Cost" data were also determined by standardizing length of stay data for the given disease or group of diseases against the national, all age, average length of stay in 1971 (7.80 days). Those conditions with a stay of 150% or greater than the average were defined to be high (H) cost disease conditions. Those less than 50% of the average were defined as low (L) cost conditions. Those from 50% - 150% were defined as medium (M) cost diseases. Using this measure the following conditions were considered high cost conditions:

1. Carcinoma of the Breast
2. Neoplasm of large intestine and rectum
3. Chronic Arteriosclerotic Heart Disease
4. Acute Myocardial Infarction
5. Diabetes Mellitus
6. Cerebral Vascular Disease
7. Hyperplasia of Prostate
8. Cholelithiasis
9. Fracture of the lower limb
10. Psychoses

Table 11 is a compilation of the above frequency, cost and quality data.

Table 11

COMPILATION TABLE

	ICDA-8 CODE	PERCENTAGE OF DISCHARGES NCHS ALL AGES[1]	XVIII[2]	NCHS 65 YRS & OLDER[3]	RANK ORDER XIX[4]	RELATIVE COSTS[5]	ESTIMATED HEALTH SYSTEM IMPACT ON OUTCOME[6]
Diarrheal Diseases	009	1.05		0.51		L	M
Neoplasm, Lge Intestine & Rectum	153,154,197.5	0.43		1.18		H	M
Neoplasm, Breast	174	0.47		0.82		H	M
Diabetes Mellitus	250	1.45	2.8	2.74	(8)	H	L
Psychoses	290-299	0.81		0.49		H	M
Cataract	374	0.81	3.0	2.81		M	H
Hypertension	400-404	0.76		2.35			H
Acute Myocardial Infarction	410	1.14	3.2	2.70		H	M
Chronic Arteriosclerotic Heart Disease	412	3.29	4.7	9.73		H	M
Other Coronary Heart Disease	411,413,414	0.58	2.2	1.15	(12)	M	M
Heart Disease - Unspecified	420-429	0.82	2.7	1.73		M	M
Cerebral Vascular Disease	430-438	1.79	5.6	6.30		H	M
Upper Respiratory Infections	460-465	1.19		0.52	(6)	M	L
Pneumonia	480-486	2.17	3.3	2.96	(2)	M	H
Hypertrophy Tonsils & Adenoids	500	3.32		*	(4)	L	L
Ulcer; Stomach, Duodenum, Jejunum	531-534	1.42		1.75		M	M
Acute Appendicitis	540-543	0.96		0.19	(11)	M	H
Hernia Without Obstruction	550-553	1.59	2.6	2.84		M	H
Gastroenteritis	561	0.55		0.83	(3)	M	M
Cholelithiasis	574	1.36	1.7	1.76		H	H
Cholecystitis	575	0.44	0.8	0.73	(5)	M	M
Urinary Tract Infections	590,545	1.03		1.38		M	M
Hyperplasia Prostate	600	0.64	2.4	2.19		H	H
Menstrual Disorders	626	1.47		0.16	(10)	M	M
Pregnancy with Complications	630-634	1.06		...		L	H
False Labor	634.7					L	L
Abortion	640-645	1.60		...	(7)	L	M
Uncomplicated Delivery	650	9.40		...	(1)	M	M
Delivery with Complication	651-661.9	1.92		...		M	H
Fracture, All	800-829	3.62		4.89		H	H
Fracture Lower Limb	820-829	1.03		2.87		H	H
Lacerations, Trauma	870-907	1.26		0.47		M	H
Complications and Adverse Reactions	960-999	0.91		1.11	(9)	M	H

NOTES:

1. "NCHS all ages" are National Center for Health Statistics data adjusted to percent of total discharges for all ages. These data are from a sample of 379 hospitals, highly stratified on the basis of bed sizes and representative of the 6,965 short stay hospitals in the U.S. in 1970.

2. "XVIII" is 1969 data from the Office of Research and Statistics, Social Security Administration, expressing in percent of the total, the discharges for the 1969 Medicare population.

3. "NCHS 65 years and older" are 1970 data from the National Center for Health Statistics derived from the all ages data.

4. "XIX" data are a compilation of anecdotal information from the states of New Mexico, Illinois and Massachusetts indicating in rank order the most frequent causes for hospitalization in those programs.

5. H, M, and L indicate high, medium, and low costs.

6. H, M and L indicate high, medium and low amounts of positive impact by the health care system on the outcome of the disease or condition.

* Data does not meet standards of reliability or precision... Not applicable.

TAB B

Tracer Diseases as Defined by Kassner et. al.

1. Otitis media with hearing loss
2. Visual disorders
3. Iron deficiency anemia
4. Hypertension
5. Urinary tract infections
6. Cervical cancer

TAB C

Diagnostic Categories Utilized by Payne in Assessing the Quality of Hospital Care in Hawaii

Acute Cholecystitis
Chronic Cholecystitis
Cancer of the Breast
Congestive Heart Disease
Pregnancy Full Term
Ceasarean Section
Abortion
Pneumonia
Bronchitis
Cerebral Vascular Accident
Stroke
Diabetes Mellitus New
Diabetes Mellitus Old
Fibromyoma
Gastroenteritis
Fracture Radius and Ulna
Benign Prostate Hypertrophy and Cancer Prostate
Cancer of the Cervix
Tonsillectomy and Adenoidectomy
Urinary Tract Infection, Acute
Urinary Tract Infection, Chronic

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Appendix B

Collection of Baseline Data for PSRO Evaluation

APPENDIX B

COLLECTION OF BASELINE DATA

FOR PSRO EVALUATION

I. Introduction

An extensive and continuing evaluation of the PSRO program is necessary to assure its successful growth and development. The accomplishment of this task is dependent upon the ability to collect baseline data. For purposes of this paper, baseline data are defined as information pertaining to the period of time prior to implementation of a PSRO.

These baseline data will be utilized by individual PSROs for identifying specific problem areas requiring extensive review efforts and, in later periods, evaluating their impact.

At the National level baseline data will be used to evaluate the impact of the PSRO program on physician and institutional behavior as it relates to quality, utilization and cost. The following evaluation issues specified by the plan require collection of baseline data:

1. Has Admission Certification and Continued Stay Review (concurrent review) been effective methods of reducing medically unnecessary hospital utilization?

2. Is Concurrent Quality Assessment (CQA), as carried out in the PSRO program, an effective method of assuring the appropriate utilization of services (diagnostic and therapeutic procedures)?

3. Is retrospective health care review, as carried out in the PSRO program, an effective method of assessing the quality and appropriateness of the utilization of services?

4. Are the health care review activities (AC, CSR, MCE, and profiling), as carried out in the PSRO program, assuring the quality and appropriateness of the utilization of health care services?

5. What has been the impact of PSRO activities on physicians' behavior?

6. What has been the impact of PSRO activities on institutional behavior?

7. What has been the effect of PSRO activities on health expenditures in the U.S.?

8. What has been the impact of PSRO activities on the health status of the Medicube and non-Medicube populations?

II. Types of Data

Baseline data at the National level can be classified into the following types:

1. Utilization review data (length-of-stay and admissions by diagnosis)

2. Quality of care data (diagnostic and therapeutic procedures as related to patient management and, to the extent feasible, measures of medical outcome)

3. Cost of review and cost of care data

4. Population data.

Utilization Review Data

Data on admissions and length of stay by diagnosis could be collected for a national sample of hospitals. Because number of admissions should be related to population bases, it would be desirable to collect data for all hospitals in individual PSRO areas for a sample of PSROs. In cases where this is not feasible, an assumption could be made that changes in admission rates by diagnosis do not reflect shifts in admissions between hospitals in and out of the sample.

Quality of Care Data

For the collection of quality of care data (diagnostic and treatment procedures and, to the extent feasible, measures of medical outcome), a basic question exists as to whether the collection of baseline data, for specific diagnoses, from a national sample of hospitals is appropriate. Changes in diagnostic and treatment modes are likely to result from MCE studies or Concurrent Quality Assessment (CQA) rather than from national programs to combat particular problems or change particular treatment and diagnostic modes. There may be few, if any, specific diagnoses that are the subjects of MCE studies or intensive efforts within CQA in a majority of hospitals under PSRO review. Under these circumstances, an evaluation of quality of care data on selected diagnoses from a national sample may not reveal significant changes in diagnostic and treatment modes, simply because an insufficient number of hospitals made efforts to change diagnostic and treatment modes for the selected diagnoses.

An alternative to collecting quality of care data from a special national sample of hospital patient records is to collect data as a part of ongoing efforts toward improvement of the quality of care for specific diagnoses, e.g., MCE studies. Alternatives using a national sample approach and the ongoing data approach are described in Section 3.

Cost Data

Baseline requirements for cost data include data on both cost of medical care review and on cost of medical care. A separate study has been initiated which, using a sample of 30-40 hospitals, seeks to determine cost of medical care review in non-PSRO areas. Data will be collected for the periods both before and after implementation of the new U.R. regulations. The results of this study should satisfy baseline data requirements for cost of medical care review.

Several of the baseline data options described below provide cost of care data. If none of these options are implemented, cost of care data for Medicare beneficiaries could be obtained from SSA.

Population Data

Baseline data on the number of residents in PSRO areas and the number of Medicare and Medicaid eligibles are required for the computation of admission rates and possibly other population based measures. Data on both overall population and Medicare eligibles are readily available for PSRO areas. Data on Medicaid eligibles may not be available for all states. In some of the states where the data are available, they may not be very accurate, in part because of changes in Medicaid eligibility. This may reduce somewhat the number of PSRO areas in which baseline Medicaid admission rates can be computed. Since there is only one option available for the collection of this data, it is not considered a part of any of the specific baseline data options and is, therefore, not explicitly included in the discussion of the options, below.

III. Baseline Data Options

The options considered fall in two classifications: those using existing or soon to be existing (options 3, 4 and 5) data systems or those requiring data to be abstracted from individual patient records (Options 1, 2, 6 and 7). These options are:

1. Sample patient records from national sample of hospitals.

2. Have individual PSROs sample patient records from national sample of hospitals.

3. Use of abstract service data (PAS along with other private data systems where available).

4. Use of MADOC data.

5. Use of UHDDS data.

6. Collect retrospective data on quality of care as a part of national medical care evaluation studies.

7. Have individual PSROs sample patient records prior to implementation of particular quality assurance efforts.

In addition, two or more of these options can be combined to satisfy baseline data requirements. In fact, Options 6 and 7 should only be considered if they were used with one or more of the other options.

Option 1: Sample patient records from a national sample of hospitals.

Under this option, teams would visit individual hospitals and abstract data from medical records. The hospitals would be part of a national representative sample of hospitals, with the sample stratified by hospital size, region, population density and teaching affiliation. The sample size required to be able to ascertain with 95 percent confidence that an observed change in LOS of .2 days, for each of 7 common diagnoses, is not due to chance is at least 30,000. If this level of accuracy were desired for each of 4 regions, the required sample size is approximately 130,000. (See Attachment 1 for a discussion of required sample size.) These medical records of Medicube* beneficiaries would be selected from records in a sample of between 300 and 1,000 hospitals.

Accessibility

Accessibility of the data is a significant problem with this option. Given heightened sensitivity to confidentiality and invasion of privacy in recent years, many hospitals selected as part of the sample may not wish to provide access to patients' medical records. At a minimum, the medical staff would have to approve granting outside access to medical records, and in some hospitals, approval of the hospital board of directors may also be required. It can be anticipated that the process of gaining access to medical records rooms will be a difficult and time consuming one requiring extensive communication with

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* Medicare, Medicaid, and Maternal and Child Health

local medical societies and hospital associations. In some areas, where an anti-PSRO attitude prevails within the medical community, access may be denied. Furthermore, requests for detailed information on prices and individual patient charges may not allay suspicians that the Federal Government is looking for instances of overcharging or fraud. This was evident from the GEOMET study, in which patient record data were collected in six Washington, D. C. area hospitals. 1/

The accuracy of the data is likely to be relatively good. Primary sources of error are expected to be omissions and sloppiness in data entered in the medical record (which is a source of error for all options) and abstracting error, in part related to unfamiliarity with notation and coding methods used in particular hospitals. Data are not available on error rates for data abstracted from medical records by outside abstractors. A Hawaii EMCRO reabstracting project, in which data were originally abstracted by hospital employees, found error rates for primary diagnoses of between 5 and 10 percent. 2/

A problem common to all options is differences among physicians in method of determining the primary diagnosis, especially for Medicare patients for whom multiple diagnoses are common. Physicians may commonly interpret primary diagnosis as that which is most life threatening, that which is responsible for the admission or that which primarily determines the length-of-stay.

Adequacy

Data from medical records are more detailed and complete than other potential data sources. Detailed information would be available on length-of-stay, primary and secondary diagnosis and the pattern of medical care provided for selected specific diagnoses. An example of a set of diagnostic specific abstract forms appears as Attachment 2. For each diagnosis, information would be collected on diagnostic and treatment procedures performed, indications for discharge and complications that may extend length-of-stay. However, as noted above, quality of care data collected for a national survey, including areas where efforts to change patterns of medical practice have not been made for the diagnoses chosen, may not be adequate for a determination of the impact of PSRO on quality and patterns of care.

1/ GEOMET, working under government contract (HSA-105-74-7), completed a pilot study to determine the feasibility of collecting baseline data, using patient records as the source, from a National sample of hospitals.

2/ Arthur D. Little, Inc., "Evaluation of Hawaii EMCRO," Contract HSM 110-73-526, p. 66.

Cost and charge data are not available via this option, but could be acquired for Medicare and Medicaid beneficiaries from SSA and state Medicaid agencies, respectively.

Timeliness

The data would be completely adequate from a time perspective, serving as baseline data for both already functioning and future operating PSROs.

Cost

The cost of collecting patient record data is considerably greater than for other options. As a rough cut at cost estimation, assume a desired sample of 30,000 records in 300 hospitals in 30 PSRO areas, with an abstractor able to abstract 12-15 records per day. This would require approximately 2,400 man days of abstracting time, (10 man years), plus a considerable amount of training and travel time to select the appropriate sample from each hospital's medical records. The personnel cost of abstracting the data, including overhead, sample selection, travel and per diem, may exceed 750,000 dollars. This would be in addition to public relations costs associated with the effort, data processing, analysis and other costs that could bring the total cost of the baseline data study to 1.2 million dollars. If the required sample size were 130,000 medical records, the cost of the study could exceed 3 million dollars.

Option 2: Have individual PSROs sample patient records.

This option is similar and has many of the same attributes as Option 1. Each PSRO that is included in a national sample of PSROs would hire and train personnel to abstract data from a sample of medical records. One important distinction between this and Option 1 is that access to data is likely to be substantially improved. The PSRO could be expected to have a continuing operating relationship with hospitals in its area and, presumably, would be less likely to experience problems with access to medical records, both in terms of denial of access and abstracting at inconvenient times.

On the negative side, the accuracy of the data would be less than of Option 1. The uniformity of the abstracted data across PSROs will be decreased because of variation in instruction and training received by abstractors. Both the cost and timeliness of data under this option can be expected to be similar to that of Option 1.

Option 3: Use Abstract Service data (PAS, along with other private data systems where available).

The professional Activity Study (PAS) system is a data tabulation service in which hospitals with 42 percent of total short term hospital discharges are enrolled. Data abstracted by individual hospitals and forwarded to PAS for processing and tabulation include basic patient characteristics, length-of-stay, primary diagnosis, surgical procedures performed, expected payment method, disposition of patient, basic diagnostic information and indication whether certain pathological and radiological tests were performed. (The standard PAS abstract form is included as Attachment 3).

In addition to PAS, Blue Cross sponsored Health Data Systems (HDS) and several state organized hospital data abstract services process and tabulate hospital data very similar to that described above.

The option involves collecting data either directly from the data tabulation service or from individual hospitals for several diagnoses from a national sample of hospitals. The number of diagnoses for which data would be collected, and the stratification of the hospital sample would be as described in Option 1. (The number of admissions for which data would be collected may be larger if the marginal cost of increasing the sample size is small).

Accessibility

Access to data is likely to present some problem but less so than for Option 1. Individual hospitals would have to either provide the data to us or grant permission to the abstracting service to provide the data, but hospitals are not likely to be as sensitive concerning release of these already tabulated data as with outsiders examining actual patient records.

Accuracy 3/

The level of accuracy of the abstract service data may be less than for Option 1. Error rates may be relatively high due to abstracting and coding errors in preparing the data for the data tabulation services.

3/ The Institute of Medicine of the National Academy of Science is under government contract to assess whether utilization data obtained from discharge abstract services can be used for baseline data in the PSRO program evaluation. Results from this study are expected by Jan. 1976.

Data on error rates for abstract service data are scarce. PAS, the major abstracting service, has done little or no reabstracting of hospital records to test levels of accuracy. Some inference on expected error rates may be made from two studies: 1974 analysis of HUP Hospitalization Utilization Project (HUP - a Pennsylvania based hospital abstract service), and a study of error rates from the UHDD Demonstration Project. 4/ The methodology of the HUP study is not specified but, as it concerns primary diagnosis, designated errors would probably include only coding errors and gross diagnostic errors (i.e., the diagnosis indicated was not related or close to any of the diagnoses appearing in the medical record). The average error rate was only .15 percent during the July-December 1973 period. The error rate for any specific abstract item never exceeded 1/2 of one percent and only 3 percent of individual records have any errors. The UHDD error rate for principal diagnosis was 10 percent, but the methodology included in depth reabstracting of the medical records. The error rate includes, in addition to coding errors, errors in determining which of several diagnoses appearing in the medical record should be classified as principal, and designating the appropriate diagnostic code even where "two codes describe virtually identical conditions." 5/ Thus, the error rate, when measured in this way, may not be much less than 10 percent even under option 1, where baseline data would be abstracted directly from the medical records. An overall assessment of error rates from the above sources may lead one to conclude that the marginal increase in error rates is not a substantial problem.

Discussions with researchers in the health care delivery area, however, lead one to be less sanguine concerning abstract review data reliability. While most abstract services will pick up obvious inconsistencies (i.e., male pregnancies), there are numerous possibilities for other coding errors that would not be discovered. Because the incidence of these type errors is unknown, some researchers are wary about relying on abstract service data to satisfy PSRO baseline data requirements. Before abstract service data would be used, a reabstracting study of the major abstracting services data to determine error rates would be performed. Planning and initial arrangements for such a study have been initiated.

An additional problem is that medical records librarians and coding clerks in different hospitals use different guidelines and

4/ "Focus," Hospital Utilization Project, November-December 1974; "Uniform Hospital Discharge Data Demonstration - Summary Report," BHSR and E, NCHSR and E, PHS Grant No. 500400.

5/ "Uniform Hospital Discharge Data Demonstration," p. 39.

criteria in determining primary diagnosis, in listing other diagnoses, etc. This may even vary over time within the same hospital as personnel change.

There may be a problem of hospitals participating in abstract services not being representative of all U.S. hospitals. Participation in private abstract services is voluntary and hospitals that do participate may be more concerned with collecting data useful for utilization review than hospitals that do not participate. There is no simple way to check this. What is known is that for PAS, the largest abstract service, a far greater proportion of hospitals of more than 100 beds (39 percent are covered by PAS than of hospitals of less than 100 beds (13 percent.) 6/ It may be that PAS hospitals, as a group, have superior medical records departments than hospitals that don't participate.

Adequacy

Abstract service data would be adequate for number of admissions and LOS by diagnosis, but because data on diagnostic and treatment procedures are relatively scant, the data would not suffice as base-line data for quality of care. As indicated earlier, however, Options 1 and 2 may not be adequate for this purpose either.

Very few hospitals report cost data or charge information, which is optional in PAS. Medicare and Medicaid charge and cost data would have to be used instead. These data, while available by principal diagnosis, would not be available for the PAS sample of admissions.

Timeliness

The data would be adequate from a time perspective. Approximately 90 percent of PAS data are available within three months of the end of the period within which hospital discharges occurred, and data would be available before PSROs become (or became) operational in particular areas.

Cost

The cost of Option 3 is considerably less than of options 1 and 2. The cost of data acquisition should be in the range of that charged individual hospitals, which is 30 cents per admission. There would be additional costs of communicating with individual hospitals for purposes of their granting OPSR access to their data, either

6/ Commission on Professional and Hospital Activities, Length of Stay in PAS Hospitals, 1974, Table A.

directly or through abstracting services.

Option 4: Use of MADOC data.

The Social Security Administration regularly publishes data abstracte from Medicare claims forms, based on a 20 percent sample of those forms. A listing of the data elements collected for the Medicare Analysis of Days of Care (MADOC) is enclosed as Attachment 4. Informa tion is available concerning length-of-stay, discharge diagnosis, the performance of surgical procedures (yes or no), the existence of secondary diagnoses and charges for nine hospital charge centers. Periodic reports are made available to all hospitals within each 275 hospital areas, which provide data for each hospital in the area. This enables individual hospitals to compare their performance with that of similar hospitals in their immediate area. (Estimates of expected length-of-stay, based on statistical analysis of hospital and patient characteristics, are also provided.)

In the 275 area format currently available, the MADOC data are clearly inappropriate for use as a primary source of baseline data for the PSRO program. However, plans exist to change area designations to coincide with designated PSRO areas.

Accessibility

The data are accessible. The system for abstracting and publishing the data for individual hospitals is already operational.

Accuracy

Error rates are probably similar to those associated with abstract service data. Primary sources of error for primary diagnosis include sloppiness in entering information in the medical record, and errors (judgment and coding) in abstracting data for the Medicare claims form.

Adequacy

MADOC data are incomplete as a source of baseline data. Data are not included for Medicaid beneficiaries, who constitute over one third of Medicube admissions. Additional problems are that discharge diagnosis is used rather than primary diagnosis or admitting diagnosis, and information is not abstracted (and apparently, does not exist for a significant proportion of claim forms submitted to Medicare) on secondary diagnoses and surgical procedures performed. Significant changes in data submission requirements and in the claims form would be required to correct these latter problems.

Timeliness

The timeliness of MADOC data may pose a problem. While data would be available for both new and established PSROs, there have been lags in excess of two years between the end of the data collection period and when the data are available for use. Hopefully, this period could be reduced to something less than one year. (SSA has indicated that they could provide us with 1973 data for a sample of PSRO - non-PSRO areas sometime in the summer of 1975.)

Cost

The cost of this option is minimal as the data collection and preparation system is already in place.

Option 5: Use of UHDDS Data

It is anticipated that by early 1976, all hospitals will be required to collect a Uniform Hospital Discharge Data Set for each Medicare and Medicaid admission.

The UHDDS data includes information on basic patient characteristics, length-of-stay, principal and secondary diagnoses, and significant procedures. For Medicare admissions, the UHDDS will be combined with the claims form so that cost-charge information would also be available. The UHDDS appears in Attachment 5.

Accessibility

There are no confidentiality associated access problems with Option 5 as the UHDDS information will be forwarded to HEW, although the route is, as of yet, undetermined.

Accuracy

The accuracy of the data can be expected to be equal to or superior to that of Option 3 (abstract service). The error rate of 10 percent for principal diagnosis noted earlier from the UHDDS demonstration project is applicable to this option. The area where this option can be expected to be superior to Option 3 is in comparability across hospitals. Instruction and to the extent that it occurs, training for completing the UHDDS will be uniform across hospitals, making inter-hospital comparison more reliable than with Option 3.

Adequacy

The UHDDS data can be expected to be adequate for utilization data. While UHDDS does not contain cost or charge information, charge data for Medicare beneficiaries in the UHDDS baseline data sample should be available (from SSA) and should be useful in assessing the impact of PSRO on cost of care. Only limited information will be available from UHDDS with respect to quality data. Therefore, it will not be adequate as baseline data for assessment of quality of care.

Timeliness

There may be a UHDDS problem with the timely availability of the UHDDS data. Implementation of UHDDS will not start before calendar year 1976. These data would not be adequate baseline for original, newly conditional, (FY75), and other PSROs that become conditional in calendar year 1975. For these PSROs, data would have to be obtained from one of the other options.

Cost

The cost of acquiring baseline data under Option 5 should be substantially less than Options 1, 2 or 3. All abstracting costs and much of the computer cost will have been incurred as part of the monitoring functions of the Medicare, Medicaid and PSRO programs. Marginal costs associated with processing of baseline data for this option can be expected to be minimal.

Option 6: Collect retrospective quality of care data as part of National Medical Care Evaluation studies.

(Both this and the following option would provide baseline data primarily on quality of care and would be expected to be used along with some other option(s) which would provide utilization and cost of care data.)

Under this option, OPSR-BQA would sponsor a series of diagnostic specific studies in hospitals in which efforts were made to improve the level of care for these diagnoses The purpose would be to determine if specific PSRO sponsored efforts to improve quality of care achieved their goals. These studies would be initiated during the second and perhaps third year of the operational life of the PSRO. As an integral part of these studies, retrospective data would be collected for the period prior to PSRO operational status, with the primary source of these data expected to be medical records. 7/

7/ The implementation of this option would require a major policy change in the PSRO program.

Access, Accuracy and Adequacy

No serious access problems are anticipated with this option. It should provide accurate and adequate baseline data on quality of care. It is superior to Options 1 and 2 (sample medical records from a national sample) in that it would not seek to determine if changes occurred in diagnostic and treatment modes for diagnoses for which no PSRO effort was made to produce change. It is therefore a superior test of the impact of PSRO on quality of care, where PSRO sought to have an impact.

A defect of this option may be that it could subject the evaluation effort to charges that those hospitals chosen for study were not a random selection of hospitals in PSRO areas, but those whose efforts to improve quality of care were, a priori, likely to be most successful. This defect could be minimized by developing a methodology for randomly selecting hospitals for study among all PSRO hospitals in which efforts were made to improve care for specific diagnoses. This is desirable and feasible.

Timeliness and Cost

The timeliness of the data availability is not likely to pose any problems. The cost of this option is unknown, but probably less than that of Options 1 and 2.

Option 7: Have individual PSROs sample patient records prior to implementation of particular quality assurance efforts.

Under this option, whenever a PSRO undertakes an MCE study or an effort to establish criteria and standards for treating particular conditions, an integral part of that effort would be a systematic evaluation, using all relevant hospital records, of all aspects of current diagnostic and treatment modes for that condition.

Access, Accuracy and Adequacy

No access problems are anticipated for this option. Both the accuracy and adequacy of baseline data under this option should exceed that of the other options for the specific purpose noted above. Specific instructions and guidelines on method of obtaining baseline data would be provided by OPSR-BQA (probably, after development by an outside contractor), and resources would be available within OPSR-BQA to assist in the data collection effort. Because each data collection effort would be tailored to and part of specific efforts

to change modes of practice, it would be more suitable and productive for measuring PSROs' impact on modes of practice and outcome than Options 1 or 2.

Timeliness and Cost

The data are expected to be available on a timely basis. The cost of collecting baseline data under Option 7 may be substantial, but much it would generally be incurred as part of MCE studies and adherance to quality standards efforts. The marginal cost of systematizing the data collection effort so that the data can be used as baseline data on process and outcome may not be large and should be considerably less than of data collection under Option 1 or 2.

IV. Collecting baseline data from multiple sources

It was explicitly noted that use of either Option 6 or 7 requires the use of an additional option for utilization and cost of care baseline data. It may also be desirable to jointly use other options for collection of utilization and cost of care data. MADOC data could be used to supplement UHDDS in areas where implementation of UHDDS is too late to serve the baseline purpose. Similarly, if abstracting service were the primary baseline data option, MADOC or UHDDS might be used as a supplement in PSRO areas where PAS or other available data tabulation services are not in common use, or where access to the data was not granted by hospitals.

The cost of this flexibility may be minimal as several of the data sources considered for use as baseline data will be available whether used for this purpose or not.

The extent to which each of the seven baseline data options meet the criteria for access, accuracy, adequacy, timeliness and cost are noted in summary form, in Table 1.

BASELINE DATA OPTIONS

	ACCESSIBILITY	ACCURACY	ADEQUACY	TIMELINESS	COST	COMMENTS
1) Sample patient records from national sample of hospitals	Likely to pose significant problems	Good	Good for utilization; Good (with reservations) for quality of care; Good for cost	Good	Very high	Substantial accessibility problem
2) Individual PSRO's sample records from national sample of hospitals	Likely to pose some problems	Good	Good for utilization; Good (with reservations) for quality of care; Good for cost	Good	Very high	Accuracy may be variable across PSRO areas
3) Use abstract service data (PAS and other abstract services)	Likely to pose some problems	Questionable	Good for utilization; Fair for quality; No cost data	Very good	Moderate	If used would want to investigate data quality
4) Use MADOC data	Good	Questionable	Fair for utilization; (no Medicaid data); Poor for quality of care; Good for cost	Fair, available for both new and existing PSRO's but with delay of 1 to 2 years	Very low	Unacceptable, unless substantially modified
5) Use UHDDS data	Good	Questionable, but somewhat better than PAS	Good for utilization; Poor for quality of care	Fair, may not be implemented nationally until 1976	Low	Risk of data not being available for early PSRO's. May be considered for use with PAS or MADOC as a backup
6) Collect retrospective data on quality of care as a part of National Medical Care Evaluation studies*	Good	Good	Good for quality of care	Good	Unknown	For use to provide data on quality of care - must be used with some other option
7) Individual PSRO's sample patient records prior to quality assurance effort*	Good	Good	Good for quality of care	Good	Unknown	For use to provide data on quality of care - must be used with some other option

*This option assumed to be used in conjunction with options 4, 5, or 6.

Attachment 1 - Sample Size Analysis

The following sample size analysis has been carried out to minimize the resources necessary to compute PSRO baseline data on the length of stay for Medicube hospital admissions. Tables have been prepared for two alternative data collections of hospital medical records of length of stay by diagnosis. Table 1 describes the required sample sizes for 95% confidence intervals with tolerances of one quarter day (± 1/4 day) for each of the four regions of the nation by each of seven key diagnoses. Using the sample sizes from Table 1, it will be possible to measure and access changes in the mean length of stay as small as .18 days for a particular diagnosis in a particular region of the country. Table 2 describes the required sample sizes for 95% national confidence intervals with tolerances of one-quarter day (± 1/4 day) for each of seven key diagnoses. Using the data from Table 2, it will be possible to measure and access changes in the national mean length of stay as small as .18 days for each of the diagnosis.

The source data for this analysis came from the Social Security Administration publication of "Length of Stay by Diagnosis" for 1969 Medicare admissions and from the Commission on Professional and Hospital activities publication of "Length of Stay in PAS Hospitals" for 1972 admissions. The limitations of this data arise because there are variances between PAS and SSA data due to the difference in base year, differences in the computation of length of stay (LOS), and differences in the definition of short-term hospitals. PAS data are for 1972 while SSA data are for 1969. PAS data excludes patients who died, were transferred to other hospitals, were discharged against medical advice, or stayed 100 days or longer. SSA data excludes those cases for which the hospital stay was over 90 days. PAS uses the hospital adoptation of ICDA codes (H-ICDA) while SSA uses the seventh revision of ICDA codes (ICDA-7).

PAS includes only non-federal hospitals with an average stay of less than 45 days while SSA includes only non-federal hospitals with an average stay of less than 30 days. None of these differences in the PAS and SSA data preclude their use to compute variance estimates for the various diagnoses. However, assumptions must be made that the processes which generate LOS data are stable with respect to their variability. There is no need to assume that the average LOS is equal for both sources of data or constant over time.

The first step in the analysis was to compute a weighted variance for the length of stay in each region using the SSA and PAS data. Table 1 was then prepared for each region without assuming any limitations on the total number admissions for any diagnosis.

The analysis for Table 2 began with the projection of the percentage of SSA and PAS admissions for each diagnosis to compute the national expected number of hospital admissions for a quarter when the annual rate of Medicare admissions is seven million and the annual rate of Medicaid admissions is four million. Then the expected total number of admissions during a quarter for each diagnosis was divided into the expected number of admissions in each of the four regions of the nation in the same proportion as was observed in the source data. Each of these four regions was then considered as a strata and the optimal sample size for each region was computed by diagnosis. These sample sizes are optimal in that they will produce 95% confidence intervals for national mean with a tolerance of one-quarter day for each diagnosis using the absolute minimum number of observations of medical records.

While the assignment of the samples is presently only for region by diagnosis, it is possible to further subdivide the assignment to measure length of stay by hospital size, proprietorship, training affiliations, or other hospital characteristics.

REGIONAL CONFIDENCE INTERVALS TABLE 1

SAMPLE SIZE FOR 95% CONFIDENCE INTERVALS WITH TOLERANCES OF ± 1/4 DAY

BY REGION AND DIAGNOSIS

DIAGNOSIS	REGION				
	CENTRAL	EAST	WEST	SOUTH	TOTAL
I. Acute Myocardial Infarction (410.0-410.9)	10,136	9,400	6,512	7,792	33,840
Acute Coronary Occlusion (420.1)					
II. Cholelithiasis and Cholecystitis (574.0-575.9)					
Cholelithiasis	5,900	6,820	4,364	5,160	22,244
III. Gastric, Duodenal and Gastrojejunal Ulcer (531.0-534.3)					
Ulcer of Duodenum Without Perforation and without Hemorrhage (541.0)	4,792	5,900	4,608	4,424	19,724
IV. Inguinal Hernia (550.0, 552.0)					
Inguinal Hernia Without Mention of Obstruction (560.0)	2,212	2,456	1,228	1,904	7,800

TABLE 1 continued

DIAGNOSIS	REGION				
	CENTRAL	EAST	WEST	SOUTH	TOTAL
V. Pneumonia (480.0-486.3)					
Pneumonia, other and unspecified (493)	6,452	7,496	4,852	5,592	24,392
VI. Hypertrophy of Tonsils and Adenoids (500)					
*(PAS Data only)	184	184	184	184	736
VII. Diseases of the Bladder and Urethra except cystitis (594.0-594.9) (596.0-599.9)					
Other Diseases of Urethra and Urinary Tract (609)	5,100	6,020	3,748	4,668	19,536
Total	34,776	38,276	25,496	29,724	128,272

NATIONAL CONFIDENCE INTERVALS

TABLE 2

SAMPLE SIZE FOR 95% CONFIDENCE INTERVALS WITH TOLERANCES OF ± 1/4 DAY

BY REGION AND DIAGNOSIS

DIAGNOSIS	REGION				
	CENTRAL	EAST	WEST	SOUTH	TOTAL
I. Acute Myocardial Infarction (410.0-410.9)	2,453	2,130	1,053	2,053	7,689
Acute Coronary Occlusion (420.1)					
II. Cholelithiasis and Cholecystitis (574.0-575.9)					
Cholelithiasis (584)	1,951	1,179	691	1,245	5,066
III. Gastric, Duodenal and Gastrojejunal Ulcer (531.0-534.3)					
Ulcer of Duodenum Without Perforation and without Hemorrhage (541.0)	1,468	844	563	1,221	4,096
IV. Inguinal Hernia (550.0, 552.0)					
Inguinal Hernia Without Mention of Obstruction (560.0)	672	544	264	444	1,924

TABLE 2 continued

DIAGNOSIS	REGION				
	CENTRAL	EAST	WEST	SOUTH	TOTAL
V. Pneumonia (480.0-486.0)					
Pneumonia, other and unspecified (493)	1,931	1,142	680	1,629	5,382
VI. Hypertrophy of Tonsils and Adenoids (500)					
*(PAS Data only)	80	39	28	37	184
BII. Diseases of the Bladder and Urethra except cystitis (594.0-594.9) (596.0-599.9)					
Other Diseases of Urethra and Urinary Tract (609)	1,498	808	486	1,298	4,090
TOTAL	10,053	6,686	3,765	7,927	28,431

Attachment 2

PSRO Baseline Data Feasibility Study
Office of Professional Standards Review
Department of Health, Education, and Welfare

Form Approved OMB # _____

SOURCE OF DATA: Medical Record Face Sheet

Patient Number

Birthdate: Mo Day Year

Type Admission: Elective ○ Emergency ○

Physician: Staff ○ Private ○ Specialty _____

Date of Admission: Mo Day Year

Date of Discharge: Mo Day Year

Source of Payment: Title 18 ○ Title 19 ○ Title 5 ○ Other ○ Other Third-Party Payer ○ Private Pay ○

Sex: M ○ F ○

Race: Black ○ White ○ Other ○

Hospital ID

Date Form Completed: Mo Day Year

Prepared By _____

Diagnosis: Urinary Tract Infection

HICDA: 590.0-590.2, 590.9, 595, 599.9, 601

ICDA: 590.0-590.9, 600.0-600.9

Codes _____

Type Used: _____

Other Diagnoses: _____

INDICATIONS FOR ADMISSION

		Source
Recurrent Infection of Urinary Tract	○	
Acutely Ill Patient (Indications include: temp. 101°, prostration, shaking and/or chills, severe symptoms related to urination)	○	
Gross Hematuria	○	
Preplanned Therapy With Drugs	○	
Renal Failure or Progressive Azotemia	○	

EXPECTED LENGTH OF STAY

LOS

		Source
Under 3 Days	○	
4-9 Days	○	
10-14 Days	○*	
Over 14 Days	○*	

INDICATIONS FOR DISCHARGE

		Source
Temperature Normal x 48 Hours (100°)	○	
Sterile Urine Culture	○	
Obstruction Not Demonstratable or No Reason To Expect Obstruction	○	
Recovery From Any Needed Surgery	○	
_____	○	

HOSPITAL SERVICES REQUIRED FOR OR CONSISTENT WITH DIAGNOSIS

History:		**X-Ray:**		
Frequency of Urination (Day & Night)	○	Chest X-Ray	○	
Chronology of Symptoms and Signs	○	Voiding Cystogram	○	
Reference to Obstructive Symptoms (If Present)	○	IVP or Retrograde Pyelogram	○	
Congenital Anomalies	○	_____	○	
Allergic Sensitivity To Medication	○	_____	○	
_____	○	**Medications:**		
_____	○	Antibiotics or Other Anti-Infectives	○	
Physical Examination:		Diuretics	○	
Abdominal Examination (Bladder)	○	Narcotics, Sedatives, Analgesics	○	
Kidney Area Examination (CVA Tenderness)	○	**Treatment or Therapy:**		
Digital Rectal and/or Pelvic	○	Surgery (for Obstruction)	○	
_____	○	Institution of Antibacterial Therapy	○	
_____	○	_____	○	
Laboratory:		_____	○	
CBC	○	**Consultations:**		
Urinalysis	○	Urology	○	
Urine Culture and Sensitivity x 2	○	Internal Medicine	○	
_____	○	Gynecology	○	
_____	○	_____	○	
		_____	○	

COMPLICATIONS THAT MAY EXTEND LENGTH OF STAY

Fistula	○	
Neoplasm	○	
Congenital Anomaly	○	
Obstruction *	○	
Persistent Infection	○	
Operation	○	
Adverse Drug Reaction	○	
Bleeding in Urinary Tract	○	
Edema	○	
Severe Depression	○	
_____	○	
_____	○	

* Check for operation or complications.

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PSRO Baseline Data Feasibility Study
Office of Professional Standards Review
Department of Health, Education, and Welfare

Form Approved OMB # _____

SOURCE OF DATA: Medical Record Face Sheet

Patient Number: ☐☐

Birthdate: ☐☐ Mo ☐☐ Day ☐☐ Year

Type Admission: Elective ○ Emergency ○

Physician: Staff ○ Private ○

Specialty _____

Date of Admission: ☐☐ Mo ☐☐ Day ☐☐ Year

Date of Discharge: ☐☐ Mo ☐☐ Day ☐☐ Year

Source of Payment: Title 18 ○ Title 19 ○ Title 5 ○ Other _____ Other Third-Party Payer ○ Private Pay ○

Sex: M ○ F ○

Race: Black ○ White ○ Other ○

Hospital ID: ☐☐

Date Form Completed: ☐☐ Mo ☐☐ Day ☐☐ Year

Prepared By: _____

Diagnosis: Gastric or Duodenal Ulcer _____

HCDA: 531-533.3 Procedure: 45.4-45.6

ICDA: 531.0 - 533.9 Procedure: 46.2, 45.3

Code: _____

Type Used: _____

Other Diagnoses: _____

INDICATIONS FOR ADMISSION

		Source
Hemorrhage Suspected	○	
Perforation Suspected	○	
Obstruction Suspected	○	
Pain Increased or Uncontrolled by CP Therapy	○	
_____	○	

EXPECTED LENGTH OF STAY

LOS ☐☐

			Source
Non-Operative:	1 - 5 Days	○	
	6 - 8 Days	○	
	8 Days or Over	○*	
Operative:	5 - 12 Days	○	
	13 - 15 Days	○	
	16 Days or Over	○*	

INDICATIONS FOR DISCHARGE

		Source
Afebrile (≤ 100°)	○	
Adequate Oral Intake	○	
Restored Gastrointestinal Function	○	
Wound Healing	○	
_____	○	

HOSPITAL SERVICES REQUIRED FOR OR CONSISTENT WITH DIAGNOSIS

		Source
History:		
Family History	○	
Recent Weight Gain or Loss	○	
Reference to Melena, Hematemesis, Dyspepsia, Asthenia	○	
_____	○	
_____	○	
Physical Examination:		
Vital Signs	○	
Reference to Abdomen (Liver)	○	
Pelvic and/or Rectal Exam	○	
_____	○	
_____	○	
Laboratory:		
Hct or Hgb x 2	○	
Stool GUIAC	○	
BUN	○	
Electrolytes	○	
SGOT, SGPT	○	
Pathological Exam of Tissue Removed	○	
EKG (All Patients Over 40)	○	
_____	○	
_____	○	
X-Rays:		
Chest X-Ray	○	
Upper GI Series	○	
Arteriography (or Angiogram)	○	
Barium Enema	○	
_____	○	
_____	○	
Medications:		
Antacids	○	
Narcotics, Sedatives	○	
Parenteral Fluids	○	
_____	○	
_____	○	
Treatment or Therapy:		
Operating Room	○	
Blood Type and Cross Match	○	
Anesthesia: General	○	
Local	○	
_____	○	
_____	○	
Consultations:		
General Surgery	○	
Gastroenterology	○	
_____	○	
_____	○	

COMPLICATIONS THAT MAY EXTEND LENGTH OF STAY

Prolonged Pain	○	
Hemorrhage	○	
Obstruction	○	
Post-op Wound Infection	○	
Peritonitis or Intraperitoneal Abscess	○	
Fistula	○	
Post-op Gastric Retention	○	
Thrombophlebitis	○	
Diabetic Management Crisis	○	
Severe Depression	○	
_____	○	
_____	○	

* Check for complication

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Office of Professional Standards Review
Department of Health, Education, and Welfare

Form Approved OMB # _____

SOURCE OF DATA: Medical Record Face Sheet

Patient Number: ☐☐

Birthdate: ☐☐ Mo ☐☐ Day ☐☐ Year

Type Admission: Elective ○ Emergency ○

Physician: Staff ○ Private ○

Specialty _____

Date of Admission: ☐☐ Mo ☐☐ Day ☐☐ Year

Date of Discharge: ☐☐ Mo ☐☐ Day ☐☐ Year

Source of Payment: Title 18 ○ Title 19 ○ Title 5 ○ Other Third-Party Payer ○ Private Pay ○

Other: _____

Sex: M ○ F ○

Race: Black ○ White ○ Other ○

Hospital ID: ☐☐

Date Form Completed: ☐☐ Mo ☐☐ Day ☐☐ Year

Prepared By: _____

Diagnosis: Inguinal Hernia

HICDA: 550.0, 550.1, 550.2 Procedure: 38.2, 38.3

ICDA: 550.0, 550.2 Procedure: 38.2, 38.3

Code: _____

Type Used: _____

Other Diagnosis: _____

INDICATIONS FOR ADMISSION

		Source
Confirmed Presence of Hernia	○	_____

EXPECTED LENGTH OF STAY

☐ SCS

		Source
Under 3 Days	○	_____
4-6 Days	○	_____
7-8 Days	○*	_____
9 Days or Over	○*	_____

INDICATIONS FOR DISCHARGE

		Source
Afebrile on Day of Discharge (≤ 100°)	○	_____
Wound Healing (Incision Clean)	○	_____
Return of Gastrointestinal Function	○	_____
_____	○	_____

HOSPITAL SERVICES REQUIRED FOR OR CONSISTENT WITH DIAGNOSIS

History:

Documentation of Indications for Operation	○	_____
Allergic Sensitivity to Medication	○	_____
_____	○	_____
_____	○	_____

Physical Examination:

Vital Signs	○	_____
Candidate for Anesthesia - Heart and Lung Normal	○	_____
Rectal Exam	○	_____
Sigmoidoscopy (All Patients Over 40)	○	_____
_____	○	_____
_____	○	_____

Laboratory:

CBC	○	_____
Urinalysis	○	_____
BUN (or Creatinine)	○	_____
FBS	○	_____
EKG (All Patients Over 40)	○	_____
Pathology Report (On Excised Tissue)	○	_____
_____	○	_____
_____	○	_____

X-Ray:

Chest X-Ray	○	_____
Barium Enema	○	_____
_____	○	_____
_____	○	_____

Medications:

Anesthesia: General	○	_____
Local		_____
_____	○	_____
_____	○	_____

Treatment or Therapy:

Operating Room (For Hemiorrhaph , with or without Prothesis)	○	_____

Consultations:

Internal Medicine	○	_____
Urology	○	_____

COMPLICATIONS THAT MAY EXTEND LENGTH OF STAY

Wound Complication (Sepsis)	○	_____
Post-op Hemorrhage	○	_____
Resection of Incarcerated Viscus (Bowel, Ovary, etc.)	○	_____
Thromboembolli	○	_____
Diabetic Management Problem	○	_____
_____	○	_____
_____	○	_____

* Check for Complications.

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PSRO Baseline Data Feasibility Study
Office of Professional Standards Review
Department of Health, Education, and Welfare

Form Approved OMB # _____

SOURCE OF DATA: Medical Record Face Sheet

Patient Number: ☐☐

Birthdate: ☐☐ Mo ☐☐ Day ☐☐ Year

Type Admission: Elective ○ Emergency ○

Physician: Staff ○ Private ○

Specialty _____

Date of Admission: ☐☐ Mo ☐☐ Day ☐☐ Year

Date of Discharge: ☐☐ Mo ☐☐ Day ☐☐ Year

Source of Payments: Title 18 ○ Title 19 ○ Title 5 ○ Other: _____ Other Third-Party Payer ○ Private Pay ○

Sex: M ○ F ○

Race: Black ○ White ○ Other ○

Hospital ID: ☐☐

Date Form Completed: ☐☐ Mo ☐☐ Day ☐☐ Year

Prepared By: _____

Diagnosis: Cholecystitis and Cholelithiasis

HCDA: 574, 575, 576 Procedure: 43

ICDA: 574, 575, 576 Procedure: 51

Code: _____

Type Used: _____

Other Diagnoses

_____ _____

_____ _____

_____ _____

INDICATIONS FOR ADMISSION

		Source
Right Upper Quadrant Pain	○	
Jaundice	○	
Admitted for Operation (History of Recurrent Gallbladder Attacks)	○	
_____	○	

EXPECTED LENGTH OF STAY

LOS ☐☐

		Source
1-4 Days	○	
5-9 Days	○	
10-14 Days	○	
15-18 Days	○	
19 Days or Over	○	

INDICATIONS FOR DISCHARGE

		Source
Afebrile (≤ 100°)	○	
Wound Healing Satisfactorily	○	
Restored Gastrointestinal Function	○	
_____	○	

HOSPITAL SERVICES REQUIRED FOR OR CONSISTENT WITH DIAGNOSIS

History:		
Reference to Pain (Type, Duration, Location, Radiation)	○	
Patient History of Previous Episodes	○	
Reference to Food Intolerance	○	
Pregnancy History (Female)	○	
_____	○	
_____	○	
Physical Examination:		
Reference to Skin (Jaundice)	○	
Abdominal Exam (For Masses, Tenderness, Guarding)	○	
_____	○	
_____	○	
Laboratory:		
EKG (Over 40)	○	
Serum Amylase	○	
Serum Bilirubin	○	
SGOT	○	
Pathological Exam of Tissue Removed	○	
_____	○	
_____	○	

X-Ray:		
Chest X-Ray	○	
Cholecystogram	○	
Upper GI Series	○	
_____	○	
Medications		
Narcotics, Sedation	○	
Anti-Inflammatories	○	
Blood Transfusions	○	
Parenteral Fluids	○	
_____	○	
_____	○	
Treatment or Therapy:		
Operation	○	
Anesthesia: General	○	
Local	○	
_____	○	
_____	○	
Consultation		
Internal Medicine	○	
General Surgery	○	
Inhalation Therapy	○	

COMPLICATIONS THAT MAY EXTEND LENGTH OF STAY

Obstruction of Common Bile Duct (Retained Stone)	○	
Peritonitis (Chemical or Bacterial)	○	
Hepatitis	○	
Wound Disruption	○	
Wound Infection	○	
Empyema of Gallbladder	○	
Pancreatitis	○	
Medical Complications (Phlebitis, Pneumonia, Coronary, Diabetes, etc.)	○	
Post-op Hemorrhage	○	
Post-op Transfusion	○	
_____	○	
_____	○	

* Check for Complications.

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PSRO Baseline Data Feasibility Study
Office of Professional Standards Review
Department of Health, Education, and Welfare

Form Approved OMB # _____

SOURCE OF DATA: Medical Record Face Sheet

Patient Number: ☐☐

Birthdate: ☐☐ Mo ☐☐ Day ☐☐ Year

Type Admission: Elective ○ Emergency ○

Physician: Staff ○ Private ○

Specialty _____

Date of Admission: ☐☐ Mo ☐☐ Day ☐☐ Year

Date of Discharge: ☐☐ Mo ☐☐ Day ☐☐ Year

Source of Payment: Title 18 ○ Title 19 ○ Title 5 ○ Other: _____ Other Third-Party Payer ○ Private Pay ○

Sex: M ○ F ○

Race: Black ○ White ○ Other ○

Hospital ID: ☐☐

Date Form Completed: ☐☐ Mo ☐☐ Day ☐☐ Year

Prepared By: _____

Diagnosis: Acute Myocardial Infarction

HCDA: 410 - 410.9

ICDA: 410 - 410.9, 420.1

Code: _____

Type Used: _____

Other Diagnoses: _____

INDICATIONS FOR ADMISSION

		Source
Diagnosis of Acute Infarction (Established or Suspected)	○	
Diagnosis of Severe, Crescendo, or Intractable Angina	○	
Diagnosis of Arrhythmia	○	
Diagnosis of Acute Congestive Failure	○	
_____	○	
_____	○	

EXPECTED LENGTH OF STAY

			Source
Established MI:	0 - 22 Days	○	
☐☐ LOS	23+ Days	○*	
Suspected MI:	1 - 10 Days	○	
☐☐ LOS	11 - 20 Days	○	
	20+ Days	○*	

INDICATIONS FOR DISCHARGE

		Source
Stable or Acceptable EKG	○	
Absent Pain or Mild Angina	○	
Stable Pulse and Blood Pressure	○	
_____	○	
_____	○	

HOSPITAL SERVICES REQUIRED FOR OR CONSISTENT WITH DIAGNOSIS

History

		Source
Specific Reference to Character, Onset, Radiation, and Duration of Pain	○	
Reference to Dyspnea, Vomiting, Sweating, Weakness, Syncope, Leg Pains, Hemoptysis, or Dependent Edema	○	
Previous History of Angina, Myocardial Infarction, Hypertension, or Diabetes	○	
Cerebrovascular Insufficiency or Intermittent Claudication	○	
_____	○	

Physical Examinations

		Source
General Description: (at least 2 of these present) Cyanosis, Pallor, Diaphoresis, Apprehension, Dyspnea	○	
Examination of Heart (Murmurs, S5, Enlargement, Quality of Heart Sounds)	○	
Blood Pressure	○	
Examination of Lungs (Rales, Rhonchi, Expiratory Wheezing, Effusion)	○	
Abdomen (Positive Reference to Liver)	○	
_____	○	
_____	○	

Laboratory

		Source
EKG x 2	○	
CPK, SGOT x 2	○	
Electrolytes	○	
SMA-12 (or Cholesterol and Blood Sugar)	○	
_____	○	

X-Rays

		Source
Chest X-Ray	○	
_____	○	

Medications

		Source
Anti-arrhythmic Drugs		
Anticoagulants	○	
Vasopressors	○	
Diuretics and/or Digitalis	○	
Narcotics and/or Sedatives	○	
_____	○	
_____	○	

Treatment or Therapy

		Source
ICU or CCU	○	
Special Procedures:		
Cardiac Monitoring	○	
Surgery	○	
Cardioversion	○	
Cardiopulmonary Resuscitation	○	
IV Fluids	○	
Pacemaker	○	
Physical Therapy	○	

Consultations

		Source
Cardiologist	○	
Radiologist	○	
Physical Therapist	○	
_____	○	
_____	○	

COMPLICATIONS THAT MAY EXTEND LENGTH OF STAY

		Source
Shock	○	
Coronary Pain of Unusual Duration	○	
Cardiac Failure	○	
Serious Arrhythmias (Ventricular Tachycardia)	○	
Unusually Large Infarction (by EKG or Enzymes)	○	
Embolism (Systemic or Pulmonary)	○	
Perforated Interventricular Septum	○	
Persistent Tachycardia	○	
Difficulty in Regulation of Anticoagulant Therapy	○	
Pericarditis	○	
Severe Depression	○	
_____	○	

Condition at Discharge

Discharge to ECF	○	
Discharge to Home	○	
Death	○	

* Check for Complications.

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PSRO Pareline Data Feasibility Study
Office of Professional Standards Review
Department of Health, Education, and Welfare

Form Approved OMB # _____

SOURCE OF DATA: Medical Record Face Sheet

Patient Numbers: [ ][ ]

Birthdate: [ ][ ] Mo [ ][ ] Day [ ][ ] Year

Type Admission: Elective ○ Emergency ○

Physician: Staff ○ Private ○ Specialty _____

Date of Admission: [ ][ ] Mo [ ][ ] Day [ ][ ] Year

Date of Discharge: [ ][ ] Mo [ ][ ] Day [ ][ ] Year

Sex: M ○ F ○

Race: Black ○ White ○ Other ○

Source of Payment: Title 18 ○ Title 19 ○ Title 5 ○ Other _____ Other Third-Party Payer ○ Private Pay ○

Hospital ID: [ ][ ]

Date Form Completed: [ ][ ] Mo [ ][ ] Day [ ][ ] Year

Prepared By: _____

Diagnosis: Tonsillectomy and Adenoidectomy

_____

HCDA: 460, 463, 500, 501
Procedure: 28.1, 28.2, 28.3
ICDA: 460, 463, 500, 501
Procedure: 21.1, 21.2, 21.3

Code: _____

Type Used: _____

Other Diagnoses: _____ _____ _____ _____ _____ _____

INDICATIONS FOR ADMISSION

		Source
Recurrent Attacks of Tonsillitis	○	
Hypertrophy of Tonsils and/or Adenoids	○	
Recurrent Otitis Media	○	
Persistent Cervical Adenitis	○	
_____	○	

EXPECTED LENGTH OF STAY

[ ][ ] Mo

			Source
Children and Infants (12 years and younger)	2 days	○	
	days or over	○*	
Adults	4 days	○	
	days or over	○*	

INDICATIONS FOR DISCHARGE

		Source
No Evidence of Bleeding	○	
Absence of Infection or Unusual Fever (102° F)	○	
Hydration and Oral Food Intake Adequate	○	
_____	○	
_____	○	

HOSPITAL SERVICES REQUIRED FOR OR CONSISTENT WITH DIAGNOSIS

		Source
History:		
Documentation of Indications for Operation	○	
Recent Contagious Disease Exposure	○	
Bleeding Tendency (personal and family)	○	
Allergic Sensitivity to Medication	○	
_____	○	
_____	○	
Physical Examination:		
No Evidence of Present Infection	○	
Candidate for Anesthesia - Heart and Lung Normal	○	
Blood Pressure, Pulse, Temperature, Respiration	○	
Description of Nasal Airway, Tympanic Membranes, Tonsils, and Regional Lymph Nodes	○	
_____	○	
_____	○	
Consultations:		
Pediatric	○	
Internal Medicine	○	
Hematology	○	

		Source
Laboratory:		
Urinalysis	○	
CBC (Hematocrit, WBC, Differential)	○	
Prothrombin Time or Partial Thromboplastin Time (If History of Bleeding Tendency)	○	
Pathologic Exam on All Tissue Removed	○	
EKG (If History of Heart Disease, Congenital Heart Defect, or Rheumatic Fever)	○	
X-Rays:		
Chest X-Ray	○	
_____	○	
_____	○	
Medications:		
Antibiotics	○	
_____	○	
_____	○	
Treatment or Therapy:		
Operating Room (for T&A or Tonsillectomy or Adenoidectomy)	○	
Anesthesia: General	○	
Local	○	
_____	○	

COMPLICATIONS THAT MAY EXTEND LENGTH OF STAY

		Source
Hemorrhage	○	
Temperature Elevation (> 102°)	○	
Persistent Vomiting with Dehydration	○	
Persistent Cough	○	
Aspiration of Blood or Mucus	○	
Postanesthetic Lethargy	○	
_____	○	
_____	○	

PSRO Baseline Data Feasibility Study
Office of Professional Standards Review
Department of Health, Education, and Welfare

Form Approved OMB # _____

Patient Number: ☐☐

Birthdate: ☐☐ Mo ☐☐ Day ☐☐ Year

Type Admission: Elective ○ Emergency ○

Physician: Staff ○ Private ○ Specialty _____

Date of Admission: ☐☐ Mo ☐☐ Day ☐☐ Year

Date of Discharge: ☐☐ Mo ☐☐ Day ☐☐ Year

Sex: M ○ F ○

Race: Black ○ White ○ Other ○

Source of Payment: Title 18 ○ Title 19 ○ Title 5 ○ Other Third-Party Payer ○ Private Pay ○ Other _____

Hospital ID: ☐☐

Date Form Completed: ☐☐ Mo ☐☐ Day ☐☐ Year

Prepared By: _____

Diagnosis: Pneumonia

HICDA: 480.0 - 486

ICDA: 480.0 - 486.9

Code: _____

Type Umb _____

Other Diagnoses: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____

INDICATIONS FOR ADMISSION

		Source
Proven or Suspected Pneumonia	○	

EXPECTED LENGTH OF STAY

		Source
	☐ DOS	
Under 5 Days	○	
5 - 9 Days	○	
10 - 15 Days	○	
16 Days or Over	○	

INDICATIONS FOR DISCHARGE

		Source
Afebrile for 48 Hours (100° F.)	○	
Off Antibacterial Drugs for 48 Hours	○	
Radiologic Evidence of Improvement	○	
_____	○	

HOSPITAL SERVICES REQUIRED FOR OR CONSISTENT WITH DIAGNOSIS

		Source
History:		
Character of Sputum	○	
Pain in Chest	○	
Duration and Degree of Fever	○	
_____	○	
_____	○	
Physical Examination:		
Breath Sounds, Character, Presence or Absence of	○	
Rales	○	
Vital Signs	○	
Character of Respiration	○	
_____	○	
_____	○	
Laboratory:		
CBC	○	
Sputum or Throat Culture with Sensitivities	○	
_____	○	
_____	○	

		Source
X-Rays:		
Chest X-Ray	○	
Follow-up Chest X-Ray Before Discharge	○	
_____ _____	○	
_____ _____	○	
Medications:		
Antibacterials	○	
NO Sulfa Drugs	○	
NO Chloramphenicol	○	
_____ _____	○	
_____ _____	○	
Treatment or Therapy:		
Antibiotics	○	
_____	○	
_____	○	
Consultations:		
_____ _____	○	
_____ _____	○	

COMPLICATIONS THAT MAY EXTEND LENGTH OF STAY

(If Present, May Justify Extended Stay)		Source
Pleural Fluid	○	
Emphysema	○	
Meningitis	○	
Alcoholism	○	
Heart Disease	○	
Diabetes Mellitus	○	
Chronic Lung Disease With Impaired Pulmonary Reserve (Emphysema, Chronic Bronchitis, Bronchiectasis, etc.)	○	
Chronic Renal Disease	○	
Malignancy or Debility	○	
Lung Abscess	○	
Delayed Resolution	○	
Septic Arthritis	○	
Thromboembolism	○	
Atelectasis	○	
Pneumothorax	○	
Severe Depression	○	
_____	○	

* Check for Complications.

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PSRO Baseline Data Feasibility Study
Office of Professional Standards Review
Department of Health, Education, and Welfare

Form Approved OMB # _____

SOURCE OF DATA: Medical Record Face Sheet

Patient Number: ☐☐

Birthdate: ☐☐ Mo ☐☐ Day ☐☐ Year

Type Admission: Elective ○ Emergency ○

Physician: Staff ○ Private ○

Specialty _____

Date of Admission: ☐☐ Mo ☐☐ Day ☐☐ Year

Date of Discharge: ☐☐ Mo ☐☐ Day ☐☐ Year

Source of Payment: Title 18 ○ Title 19 ○ Title 5 ○ Other: _____ Other Third-Party Payer ○ Private Pay ○

Sex: M ○ F ○

Race: Black ○ White ○ Other ○

Hospital ID: ☐☐

Date Form Completed: ☐☐ Mo ☐☐ Day ☐☐ Year

Prepared By: _____

Diagnosis: Cataract

HCDA: 374.0 - 374.9 Procedure: 15.4, 15.5

ICDA: 374.0 - 374.9 Procedure: 14.4, 14.5

Code: _____

Type Used: _____

Other Diagnoses: _____

INDICATIONS FOR ADMISSION

		Source
Significantly Diminished Vision	○	
Lens State Causing or Predisposing Ocular Complications (Glaucoma, Uveitis, etc.)	○	
Intumescence	○	
Dislocated or Subluxated Lens	○	
_____	○	
_____	○	

EXPECTED LENGTH OF STAY

LOS ☐☐

		Source
1-3 Days	○	
4-6 Days	○	
7-9 Days	○	
10 Days or More	○	

INDICATIONS FOR DISCHARGE

		Source
No Unusual Pain	○	
Wound Healing (Eye Quiet)	○	
Absence of Eye Infection	○	
_____	○	

HOSPITAL SERVICES REQUIRED FOR OR CONSISTENT WITH DIAGNOSIS

History:

Specific Reference To

Previous Visual Acuity In Affected Eye	○	
Ocular Injury or Disease	○	
Systemic Disease or Allergy	○	
Hereditary Disease	○	
_____	○	
_____	○	

Physical Examination

Visual Acuity With Correction	○	
Description of Anterior Segment (Slit Lamp)	○	
Fundascopic Exam	○	
Intraocular Pressure (Tonometry)	○	
Blood Pressure (Vital Signs)	○	
Examination of Heart and Lungs (For Surgery)	○	
_____	○	
_____	○	

X-Rays

Chest X-Ray	○	
_____	○	

Medications

Optical Aids	○	
Narcotics, Sedatives	○	
Cycloplegics, Mydriatics	○	
Miotics	○	
_____	○	

Treatment or Therapy

Operation	○	
Anesthesia: General ○ Local ○		
_____	○	
_____	○	

Consultation

Specialist for Systemic Complications	○	
_____	○	

COMPLICATIONS THAT MAY EXTEND LENGTH OF STAY

Loss of Anterior Chamber	○	
Iris Prolapse	○	
Wound Separation	○	
Operative Complications	○	
Panophthalmitis	○	
Endophthalmitis	○	
Intraocular Hemorrhage	○	
Glaucoma	○	
Uveitis	○	
Pulmonary Embolism	○	
Pneumonia	○	
Thrombophlebitis	○	
Myocardial Infarction	○	
Urinary Tract Infection	○	

* Check for Complications.

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Attachment 3

THE PAS SYSTEM

1973 CASE ABSTRACT

1234567890

Detach stub before mailing batch

PATIENT NUMBER: 222350

DISCHARGE DATE: DAY 28 MONTH 1 73 — BATCH 3 — PAGE 14

Patient ______ Doctor ______

1 PATIENT NUMBER	2 AGE	3 ADMISSION DATE	4 DISCHARGE DATE	BATCH	PAGE
22350	31	DAY 3 MONTH 1 72	DAY 28 MONTH 1 73	3	14

Newborn or Stillborn 1; Days (thru 27) 2; Months (thru 23) 3; Other Year

For CPNA Use Only

5 ATTENDING PHYSICIAN: 384

6 OPTIONAL a b c

7a HOSPITAL SERVICE: 10 — b Teaching services 1, 2

8 RACE: White 1; Nonwhite 2; Black ✓; Asiatic 4; Special A 5; Interservice transfer or optional 3

9 SEX: Male ✓; Female 2

10 ADMISSION: Emergency 1; Urgent 2; From other hospital 3

11 DISCHARGE STATUS: a ALIVE — With approval ✓; Against advice 1; TRANSFERRED Other hospital 2; Extended care facility 3; Home care program 4; b DIED — Autopsy 5; No autopsy 6; c In O R 7; Post-operative 8; d Coroner's case 9

12 EXPECTED PAYMENT: a Medicare or Provincial 1; b Workmen's Comp 2; Medicaid 3; Govt agencies (not Medicare Medicaid or Provincial) 4; Blue Cross ✓; Commercial insurance 6; Voluntary charities 7; Private 8; Special B 9

13 PAS HOSPITAL NUMBER: XXXX

14 EXAMS: Rectal 1; Pelvic 2; Fundus exam 3; Tonometry 4

15 CARE UNITS: Coronary 1; Intensive 2; Isolation 3; 16 Selected case ✓

DIAGNOSES

17 FINAL DX EXPLAINING ADMISSION: 4850

18 FINAL DIAGNOSES (H-ICDA): a 5112; b 1621; c; d; e; f; g

REMARKS

Bronchopneumonia, cause unspecified
Pleural effusion, non-tuberculous
Bronchogenic carcinoma, lung
Lung biopsy
Cancer chemotherapy

19 COMPLICATIONS: Hospital infection 1; Other hospital complication 2

20 BIRTH WEIGHT (lbs or kg) / 21 WEIGHT: 180 — 22 HEIGHT: 71

THERAPY

23 DRUGS: A — Oral antidiabetics 1; Insulin 2; Thyroid, antithyroid 3; Steroid hormones 4; Diuretics 5; Antihypertensives (hypotensives) 6; Vasopressors 7. B — Vasodilators 1; Cardiac regulators 2; Anticoagulants 3; Sulfas 4; Antibiotics ✓; Other anti-infectives 6; Tranquilizers 7

24 UNITS OF BLOOD: a Whole 0; b Packed 0

25 OTHER THERAPY: Parenteral fluids ✓; Plasma, blood derivatives 2; Rh immune globulin 3; Hypothermia 4; Monitoring device 5; Oxygen ✓; IPPB 7; Other inhalation therapy 8

73 — For CPHA Use

26 TISSUE OF 29: PATH REPORT IN CHART — Diseased A ✓; Diseased B 2; No disease 3; Not coded 4. NO PATH REPORT — Tissue removed, no report 5; None removed 6

27 ANESTHESIA OF 29 (OR DELIVERY): None 0; Inhalation ✓; Intravenous ✓; Spinal 3; Saddle block 4; Epidural, caudal 5; Nerve or field block 6; Local 7; Other 8

SURGERY

28 SURGEON A: 615

29 OPERATIONS (H-ICDA) OF SURGEON A: 258

30 a: 966

31 SURGEON B

32 OPERATIONS (H-ICDA) OF SURGEON B

33 TIME OF EARLIEST SURGERY (OR DELIVERY if before surgery): a If begun within 6 hours of admission 1; b If after 6 hours, show days → 9

52 CONSULTATIONS GIVEN BY: Same service 1; Medicine 2; Surgery ✓; OB—Gyn 4; Pediatrics 5; Psychiatry 6; Physical Medicine 7

53 ADMISSION BLOOD PRESSURE: SYSTOLIC 120 — 80

54 TEMPERATURE: a ADMISSION 103

55 RESEARCH: A 0–9; B 0–9

56 SPECIALS: C 1; D 2; E 3; F 4; G 5

57 a b — 58 a b c — 59 a b c — 60 a b c — OPTIONAL — 61 a b c d: 1190 — 62: 396 — 63: 294

LAB TESTS AND X-RAYS

34 ADMISSION HGB OR HCT: 47 — 35 ADMISSION WBC: 7

36 ADMISSION URINALYSIS: None 1; Sugar 2; Albumin ✓; Microscopic or routine done later ✓

37 URINE TESTS

38 HISTOLOGY: Cervical Pap 1; Other Pap ✓; Cell block 3; Frozen section 4

39 CULTURE: Throat or nose 1; Urine 2; Blood 3; Other 4

40 OTHER MICROBIOLOGY: Bacterial smear 1; Antibiogram 2; Parasitology 3

41 FUNCTION: EKG 1; Stress EKG 2; Thyroid 3; EEG 4; Kidney 5; Pulmonary ✓

BLOOD CHEMISTRY: 45 Multichannel chemistry 0; 46 Done; 47 Abnormal result; 48 Abnormal repeated

49 X-RAY

50 BLOOD SUGAR

51 OTHER TESTS

total hospital bill

other SPC options

Attachment 4

Record Format--MADOC-5 (1/72-6/72)

	Item	Number of Positions	Code	Field Position
1.	HI claim number	11	Actual number	1-11
2.	Provider number	6	Actual number	12-17
3.	Intermediary number	5	Actual number	18-22
4.	Hospital service area number	3	Actual number	23-25
5.	Discharge date	6	6 digit number, year, month, day	26-31
6.	Discharge diagnosis (ICDA code)	4	Actual number	32-35
7.	Length of stay	3	Date of discharge minus date of admission. If difference is 0 make it 1.	36-38
8.	Age	3	Define age as a 3 position number. i.e.. 066. 067. 068 etc., as of last birthday on date of admission.	39-41
9.	Sex	1	0 - female, 1 - male	42
10.	Race	1	0 - unknown, 1 - white, 2 - negro, 3 - other	43
11.	Additional diagnosis	1	yes - 1, no - 0	44
12.	Surgical procedures	1	yes - 1, no - 0	45
13.	Discharge status	1	0 - alive, 1 - dead	46
14.	Day of admission	7	0 or 1. A code 1 is to be inserted in the relative position to indicate the actual day of the week; all others will contain 0's. NOTE: Let the first of the 7 position field be Sunday and continue with each succeeding day so that the 7th will be Saturday.	47-53

	Item	Number of Positions	Code	Field Position
15.	Intensive care charges	4	Dollars only	54-57
16.	Operating room charges	4	Dollars only	58-61
17.	Pharmacy charges	4	Dollars only	62-65
18.	Laboratory charges	4	Dollars only	66-69
19.	Radiology charges	4	Dollars only	70-73
20.	Supplies charges	4	Dollars only	74-77
21.	Anesthesia charges	4	Dollars only	78-81
22.	Inhalation therapy charges	4	Dollars only	82-85
23.	Blood charges	4	Dollars only	86-89
24.	Total charges	4	Dollars only	90-93
25.	Type of service	1	General-short term	94
		1	Specialty-short term	95
			A code 1 is to be inserted in the relative position to indicate the type of service; the other position will contain a 0. For long stay hospitals use "00."	
26.	Type of control	1	Government non-federal	96
		1	Church	97
		1	Proprietary	98
		1	Federal	99
		1	Other non-profit	100
			A code 1 is to be inserted in the relative position to indicate the type of control; all other position will contain 0's.	
27.	Number of facilities and services	2	01, 02, 03, etc.	101-102

	Item	Number of Positions	Code	Field Position
28.	Medical school affiliation	1	yes - 1, no - 0	103
29.	Bed capacity (adult)	4	Actual number	104-107
30.	Number of active members on medical staff	4	Actual number	108-111
31.	Number of resident training programs	2	Actual number	112-113
32.	Periodical interim payment	1	yes - 1, no - 0	114
33.	Date of Admission	6	6 digit number, year, month, day	115-120
34.	Date of Surgery	6	6 digit number, year, month, day	121-126
35.	Surgery code (CPT code)	4	Actual number	127-130
36.	Blood furnished (pints)	2	2 digit whole pints	131-132
37.	Intensive care days	3	Actual number from line 19E of SSA-1453	133-135
38.	Total accommodation charges	4	Dollars only, lines 19B +19C +19D from SSA-1453	136-139
39.	Blanks	11		140-150

Final tape output as follows:

Density: 9 Track High Density 1600 BPI

Blocked: 40 claims/records or 6000 characters. If less than 40 claims are available, use 9's padding.

Sorted: Major key: State code (field positions 12-13)
Secondary key: Hospital Service Area number
Minor key: Discharge date

End of file mark on each tape.

ATTACHMENT

UNIFORM HOSPITAL DISCHARGE DATA SET (UHDDS)

UHDDS

1. Person Identification

   Each admission is to be reported by the patient's unique social security number. For newborns and children not having a social security number but covered by Medicaid, the recipient I.D. number is to be used. (A unique number is essential to assure record linkage for multiple admissions of the same individual).

   If the hospital also assigns a medical record number which differs from the social security number of the recipient I.D. number, it is also to be furnished (to facilitate retrieval of individual case records).

2. Date of Birth

   Month, day and year of birth

3. Sex

   Male, female

4. Race

   White, black, other

5. Residence

   ZIP code

6. Hospital Identification

   The provider number assigned by the Medicare Program and used by Medicare and Medicaid in the hospital certification process. NOTE: Report to BQA hospital identification number assigned and used by the PSRO. Additional information about the hospital, such as its bed size, will also be reported according to BQA instructions now under development.

7. Admission Date and Hour

   Month, day, year and hour of admission

8. Discharge Date

Month, day and year of discharge

9. Attending Physician

This is the physician primarily responsible for the care of the patient from the beginning of this hospital episode. In determining the physician primarily responsible, the following criteria apply:

a. If the patient has a private attending doctor who arranged for his admission to the institution and directed his care therein, this physician is normally considered to be the attending physician in the hospital.

b. If the patient does not have a private doctor, the physician primarily responsible in the hospital is the staff member or resident to whom the patient is assigned and for whose care he/she is legally responsible.

The physician is to be identified by his/her unique social security number.

10. Operating Physician

This is the physician who performed the prinicpal procedure. The physician is to be identified by his/her unique social security number.

11. Diagnoses (Principal and Other)

All diagnoses that affect the current stay.

a. Principal Diagnosis is to be designated and is defined as: the condition established after study to be chiefly responsible for occasioning the admission of the patient to the hospital for care.

b. Other Diagnoses to be listed are:

All conditions that coexist at the time of admission, or develop subsequently, which affect the treatment received and/or the length of stay. Diagnoses that relate to an earlier episode which have no bearing on this hosiital stay are to be excluded.

NOTE: Only principal diagnosis and the number of diagnoses recorded are necessary for reporting to BQA.

12. Procedures (Principal and Others)

a. All procedures performed in operating rooms are to be reported with the dates. In addition to these procedures, all other significant procedures are to be recorded. A significant procedure is one which carries an operative or special facilities or equipment. Some examples of such procedures are cardiocatheterization, angiography, endoscopy, and supervoltage radiation therapy.

b. When more than one procedure is recorded the principal procedure is to be designated. In determining which of several procedures is the principal, the following criteria apply:

(1) The principal procedure is one which was performed for definitive treatment rather than one performed for diagnostic or exploratory purposes, or was necessary to take care of complication.

(2) The principal procedure is that procedure most related to the principal diagnosis.

NOTE: Only principal procedure, date and the number of additional procedure recorded are necessary for reporting to BQA.

13. Disposition of Patient

a. Transferred to another short-term general hospital

b. Discharged or transferred to skilled nursing facility (SNF)

c. Discharged or transferred to an intermediate care facility (ICF)

d. Discharged or transferred to another institution

e. Discharged to home or self-care (routine discharge)

f. Discharged to home under care of an organized home health service

g. Left against medical advice

h. Died

*14. Expected Principal Source of Payment

a. Self-pay

b. Workmen's compensation

c. Medicare

d. Medicaid

e. Other Government Payment (e.g. CHAMPUS)

f. Blue Cross

g. Insurance company

h. No charge (free,charity, special research, or teaching)

i. Other (e.g. relatives, friends)

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